REDACTED

AMENDED RECORD OF DECISION

SUMMARY OF REMEDIAL ALTERNATIVE SELECTION

CHEMFAX, INC. SITE

GULFPORT, HARRISON COUNTY, MISSISSIPPI

PREPARED BY

U. S. ENVIRONMENTAL PROTECTION AGENCY

REGION 4

ATLANTA, GEORGIA

DECLARATION OF THE AMENDED RECORD OF DECISION

SITE NAME AND LOCATION

Chemfax, Inc.
Gulfport, Harrison County, Mississippi
EPA ID No. MSD008154486

STATEMENT OF BASIS AND PURPOSE

This decision document presents the Amended Selected Remedy for the Chemfax, Inc. Superfund Site, located in Gulfport, Mississippi, which was chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), 42 U.S.C. Section 9601 et seq., and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300. This decision is based on the Administrative Record for the Chemfax, Inc. Superfund Site.

Data collected since the initial remedy selection indicates that the potential threat of contaminants migrating to Bernard Bayou is smaller than originally estimated. The new circumstances support the selection of a less active and more cost-effective groundwater remedy and a more extensive source removal remedy.

The State of Mississippi, as represented by the Mississippi Department of Environmental Quality (MDEQ), has been the support agency during the Remedial Investigation and Feasibility Study (RI/FS) process for the Chemfax, Inc. Superfund Site. As such, MDEQ has reviewed the documents that comprise the RI/FS and have been involved in the process. The State concurs with the amended selected remedy.

COMMUNITY ENGAGEMENT AND ADMINISTRATIVE RECORD

Pursuant to Section 117 of CERCLA and Section 300.435(c)(2)(ii) of the NCP, on October 1, 2011, EPA published a notice of the Proposed Plan in a community newspaper and subsequently provided the public with an opportunity to submit written or oral comments about the Proposed Plan. EPA held a well-attended public meeting at a school near the Site on October 13, 2011. The public comment period was open from October 1 to 31, 2011. No comments were received. A copy of the transcript from the public meeting is available as part of the Administrative Record (AR) upon which the Director of the Superfund Division, EPA Region 4, based the selection of the revised remedy. The entire AR is located in the information repository at the Orange Grove Public Library, 12031 Mobile Avenue, Gulfport, Mississippi, and at the EPA Region 4 Library located at 61 Forsyth St., S.W., in Atlanta, Georgia.

ASSESSMENT OF THE SITE

Several state and federal investigations show that historical operations at the Site have caused releases of hazardous substances into the soils and groundwater at the Site. The response action selected in this Amended Record of Decision (ROD) is necessary to protect the public health or welfare or the environment from actual releases of hazardous substances into the environment.

DESCRIPTION OF AMENDED SELECTED REMEDY

This remedial action addresses the threats posed by both the contamination remaining in the soils and sediments and the contaminated groundwater beneath the Site. The remedial action for the soils/sediments is excavation and off-site disposal at an approved facility. The remedial action for the groundwater calls for the monitored natural attenuation of the groundwater. The major components of the selected remedy for this remedial action include:

- Excavation of contaminated soils and sediments from those areas exceeding cleanup standards. These soils and sediments constitute a source of continuing contamination to groundwater that could possibly, if not removed, result in an unacceptable discharge to surface water or migrate into a deeper drinking water resource.
- Backfilling of the excavated areas with clean soil;
- Off-site disposal, at an approved facility, of the excavated soil and sediment;
- Monitored natural attenuation of the groundwater beneath the Site, with long-term monitoring of the groundwater to verify that the migration of contaminated ground water is attenuating and stabilized, there is no unacceptable discharge to surface water, and to confirm that affected ground water remains in the original area of contamination and the level of contamination in the groundwater is decreasing over time.
- Designation of a portion of the Site as a Corrective Action Management Unit (CAMU).
- Engineering controls to control surface water runoff, dust, air quality, etc. and ensure that Remedial Action Objectives are met during and after putting the remedy in place;
- Institutional controls to restrict future groundwater use until cleanup goals are met, to be enforced by the State of Mississippi.

STATUTORY DETERMINATIONS

The amended selected remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. This amended remedy utilizes permanent solutions to the maximum extent practicable. The remedy set forth in this document does not satisfy the statutory preference for treatment as a principal element since the principal threats remaining at the Site (contaminated soils and sediments) are being disposed off-site without treatment. Because this amended remedy will result in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted within five years after initiation of remedial action to ensure that the amended

remedy is, or will be, protective of human health and the environment until cleanup goals are reached.

ROD DATA CERTIFICATION CHECKLIST

The following information is included in the Amended Record of Decision. Additional information can be found in the Administrative Record file for the Site.

Chemicals of concern (COCs) and their respective concentrations	Page 11
Baseline risk represented by the COCs	Page 15
Cleanup levels established for COCs and the basis for the levels	Page 28
How source materials constituting principal threats will be addressed	Page 27
Current and reasonably anticipated future land use assumptions and current and potential future beneficial uses of groundwater used in the baseline risk assessment and the ROD	Page 19
Potential land and groundwater use that will be available at the Site as a result of the Selected Remedy	Page 29
Estimated capital, operation and maintenance (O&M), and total present worth costs; discount rate; and the number of years over which the remedy cost estimates are projected	Page 19
Key factors that led to selecting the remedy	Page 20

AUTHORIZING SIGNATURES

Pursuant to Section 104 of CERCLA, the President is authorized to undertake actions in response to a threat or potential threat to human health, welfare, or the environment. This authority was delegated to the Administrator of the U.S. EPA, then to the Regional Administrators, and through other delegations, the Division Directors of the Superfund Program are now authorized to approve these actions.

Franklin E. Hill

2/27/2013

FRANKLIN E. HILL, DIRECTOR
SUPERFUND DIVISION
U.S. EPA REGION 4

DATE

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Chemfax, Inc. Site
Gulfport, Harrison County, Mississippi
EPA ID Number MSD008154486

1.0 SITE LOCATION AND DESCRIPTION

The Chemfax, Inc. Site is located in Gulfport, Harrison County, Mississippi. It occupies 11 acres and is bordered by Three Rivers Road to the east and by Irby Steel and Creosote Road to the south (Figure 1). Located to the north is County Barn Road and Bernard Bayou, and to the west are a rail line and the abandoned Alpine Masonite facility. Emergent and forested wetlands comprise part of the Site, which is located within the southeast quadrant of the interchange where Highway 49 meets Interstate 10. The Site is a former industrial facility.

EPA has been the lead agency at the Site, while the State of Mississippi, as represented by the Mississippi Department of Environmental Quality (MDEQ), has been the support agency during the Remedial Investigation and Feasibility Study (RI/FS) process for the Chemfax, Inc. Site. As such, MDEQ has reviewed the documents that comprise the RI/FS and has been involved in the process. RI/FS activities have been funded by EPA's Superfund.

The State concurred with the original selected remedy in 2002, and concurs with this amended remedy.

2.0 SITE HISTORY AND ENFORCEMENT ACTIVITIES

Chemfax, Inc. was established in March 1955 and produced synthetic hydrocarbon resins and waxes from petroleum products. The primary operation at the time business ceased in 1995 was a paraffin blending process in which different grades of paraffin wax were heated together to a liquid state, blended, and then cooled with water. Cooling water was obtained from an on-site industrial well. Historically, condensed cooling water was stored in an on-site holding pond and re-used.

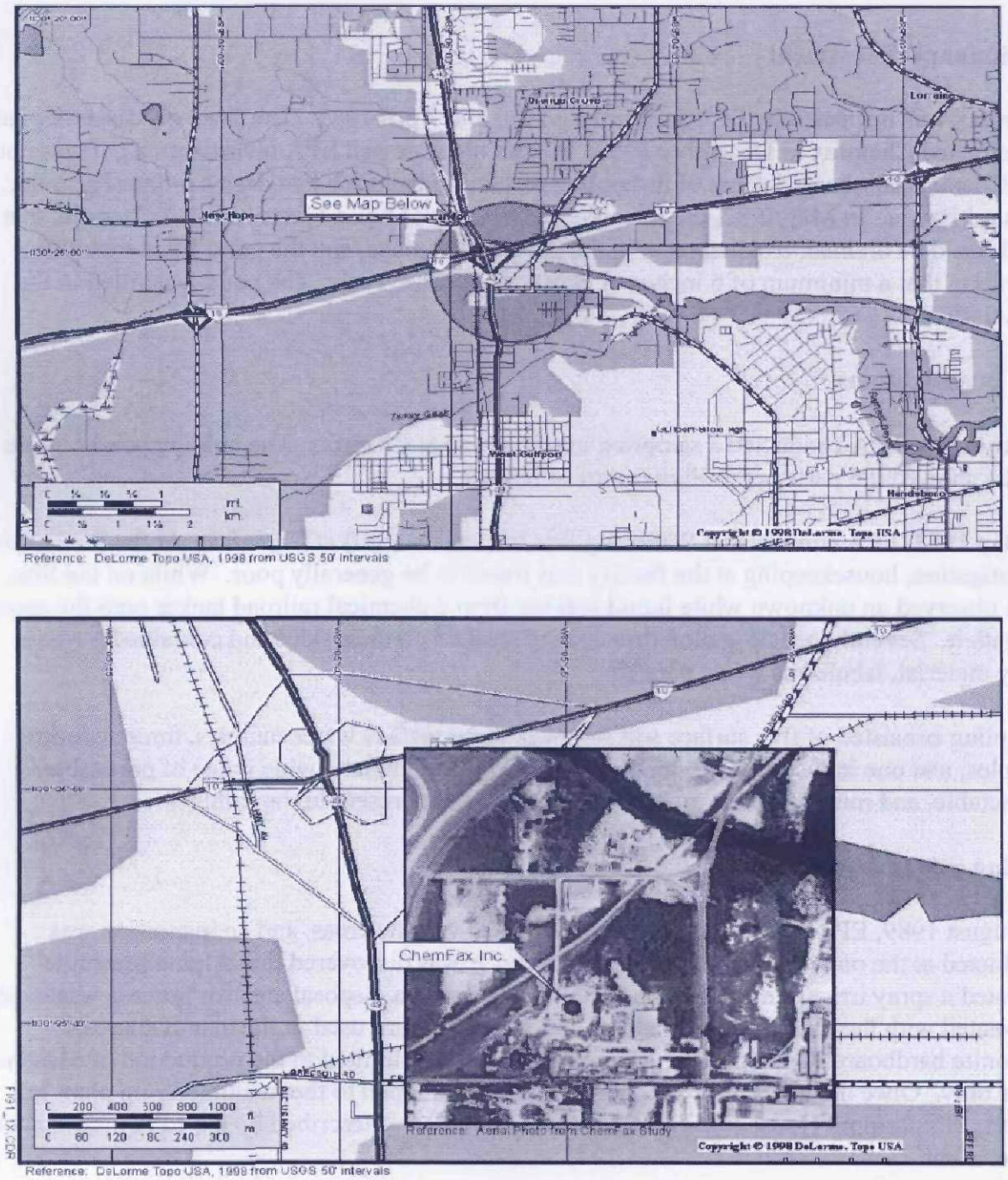

Figure 1-1

EPA

Site Location Map
Supplemental Sampling Investigation
ChemFax, Inc.
Gulfport, Mississippi

Figure 1 - Chemfax Site Location

Preliminary Assessment

Chemfax was inspected by EPA in February 1980 and April 1981. The State of Mississippi also investigated Chemfax in December 1980. In both the state and EPA investigations, it was noted that Chemfax discharged some of its cooling water into the ditch that drains ultimately to the Bernard Bayou. In May 1982, the Mississippi Division of Solid Waste notified Chemfax that the pond could be drained, residual resin in the pond left in place, and the pond filled with dirt, providing that a minimum of 6 inches of clay was used for a cap. The pond was filled in the early 1980s.

Site Investigations

In July 1981, EPA conducted a sampling investigation at Chemfax. The holding pond sample results showed 0.6 parts per million (ppm) of phenol.

In May 1988, EPA conducted a Screening Site Inspection (SSI) at Chemfax. At the time of this investigation, housekeeping at the facility was found to be generally poor. While on the Site, EPA observed an unknown white liquid leaking from a chemical railroad tanker onto the ground beneath it. Several open 55-gallon drums were stacked on their sides and contained a white, waxy material, labeled as waste paraffin.

Sampling consisted of five surface soil samples, three surface water samples, three sediment samples, and one industrial well sample. Results indicated that a wide range of purgeable, extractable, and miscellaneous organic compounds were present in the samples.

Listing Site Investigation (LSI)

In August 1989, EPA conducted a reconnaissance of off-site areas, and an inspection was conducted at the on-site Alpine Masonite facility. It was discovered that Alpine Masonite operated a spray irrigation pond. The pond functioned as a disposal area for process wastewater associated with the manufacture of glues, which were in turn used in the manufacture of Masonite hardboard. Operations at Alpine Masonite were limited to the production of Masonite glues only. Once the glues were produced, they were shipped to the manufacturing plant in Laurel, Mississippi. Housekeeping at Alpine Masonite was described by the EPA investigators as excellent.

It was also learned from another employee that Alpine Masonite operated a large lagoon located on the property now occupied by Chemfax. Aerial photographs taken in 1982 revealed a large excavated area located approximately 100 feet north of the main operations building at Chemfax, believed to be the former lagoon.

The primary purpose of the August 1989 reconnaissance was to evaluate the surface water migration pathway to facilitate the design of Phase I of the Listing Site Inspection (LSI) field

investigation. The Phase I LSI, conducted in December 1989, confirmed the surface water pathway using a dye tracer test. Thirteen sediment and three subsurface soil samples were also collected. The Expanded Site Inspection was initiated as a result of the Phase I LSI.

Expanded Site Investigation (ESI)

The ESI consisted of a wide range of activities. Field screening was conducted to aid with sample locations. Sediment, surface soil, subsurface soil, groundwater, and surface water samples were collected. In addition, an air sampling study was performed. Permanent monitoring wells were installed and logged to determine the lithology at the Site. Ambient air sampling was also conducted. The results from these ESI activities are summarized in the January, 1996 Remedial Investigation report, which is part of the Administrative Record for the Site. Figure 2 is a diagram of the Chemfax Site processes and operations.

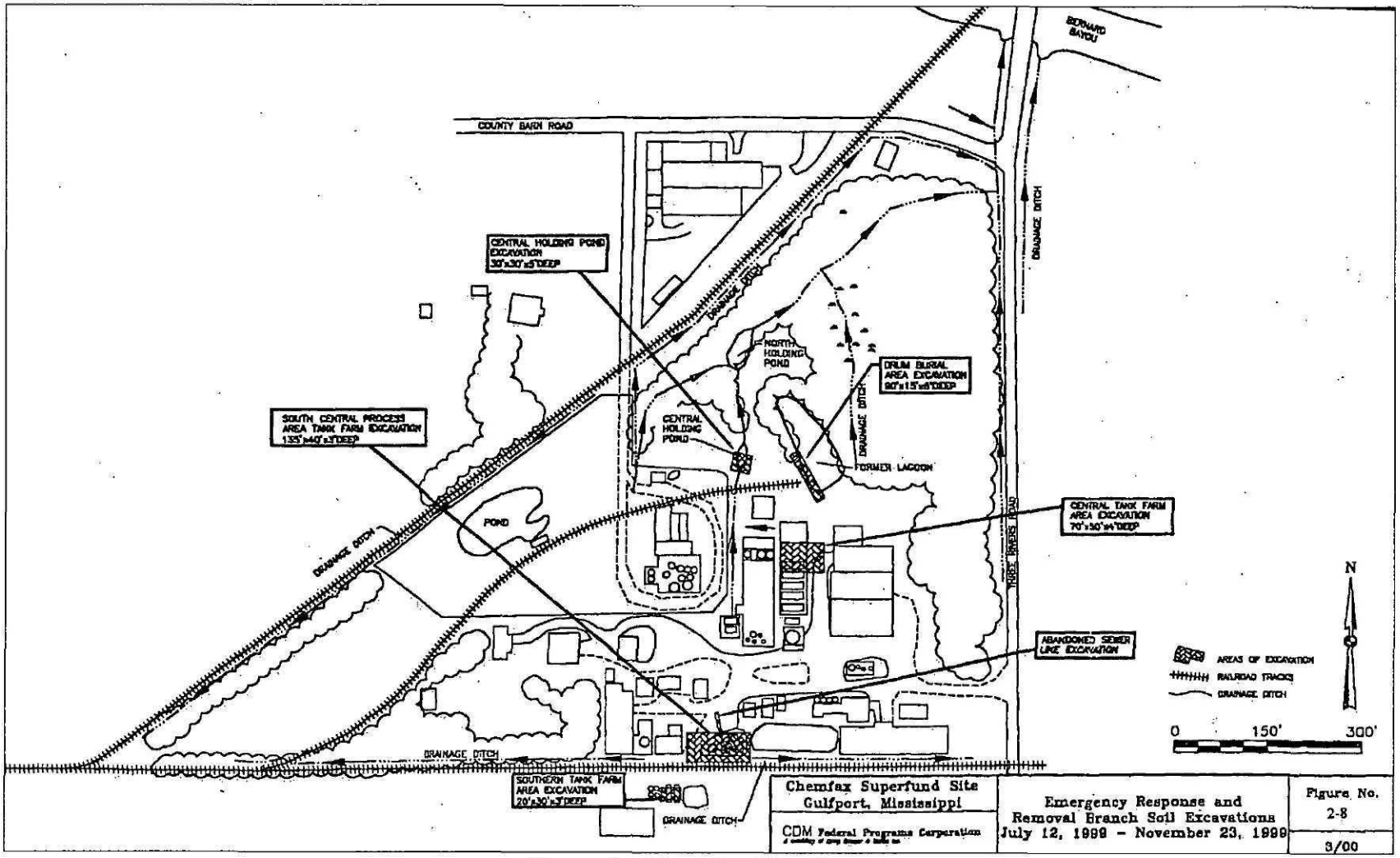

Figure 2 - Chemfax Site diagram

NPL Listing and Removal Action

Due to the contamination documented by the PA, SI, LSI, and ESI activities, the Site was proposed to the National Priorities List (NPL) in May 1993. The Site was finalized on the NPL in March 2012.

Field work for the Remedial Investigation (RI) and Supplemental Groundwater Characterization Report was conducted in-house by EPA in January 1995 and March 1999, respectively. The RI report was finalized in January 1996 and the Feasibility Study (FS) was finalized in April 2000. A baseline risk assessment for human health was also included as part of the FS, and was finalized in April 2000. An Addendum to the FS was finalized on June 7, 2000 which addressed some additional issues not included as part of the April 2000 document.

As part of the FS, EPA made a Site visit in December 1998. This Site visit revealed that the Site was now easily accessible to trespassers, many drums were stored on-site, and the Site buildings were being lived in by transients. The Site was therefore assessed under Superfund's removal authority, which is intended to address short-term threats to public health and the environment. Based on the available data, a removal action was started in July 1999 and was completed December 1999. Several activities were conducted as part of EPA's removal action. Site security was improved in order to limit access to the Site. Asbestos present on remaining equipment was removed and disposed off-site. Drums were removed off-site. Contents remaining in on-site storage tanks were also disposed off-site, in addition to approximately 2,000 cubic yards of excavated soils. Finally, most of the processing lines, tank farms, bulk storage areas, buildings, and structures were dismantled.

2.1 2002 RECORD OF DECISION

The Record of Decision (ROD) for the Site was finalized on November 21, 2002. The selected remedy in the 2002 ROD called for:

- Excavation of contaminated soils and sediments from those areas exceeding cleanup standards. These soils and sediments constitute an ongoing source of contamination remaining at the Site;
- Backfilling of the excavated areas with clean soil;
- Off-site disposal, at an approved facility, of the excavated soil and sediment;
- Extraction of the contaminated groundwater to the surface, where it will be treated by physical and/or chemical means, then discharged to surface water;
- Continuation of the groundwater remedial action until the groundwater performance standards are met;
- Designation of a portion of the Site as a Corrective Action Management Unit (CAMU);

- Institutional controls will be placed on the Site to restrict land use while the remedial action takes place;
- Fugitive dust emissions and surface water runoff during the remedial action will be controlled via engineering controls such as water, tarpaulins, or plastic sheeting and other standard erosion control measures.

Corrective action management units (CAMUs) and temporary units are means for EPA to manage wastes that are generated during remediation. Under subpart S of 40 CFR part 264, a CAMU is created to manage wastes that are generated at a Subtitle C Resource Conservation and Recovery Act (RCRA) facility for the purpose of implementing remedial actions required at that facility (i.e., remediation wastes, as defined in 58 FR 8658). In creating the CAMU as a remediation waste management unit, EPA is providing remedial decision-makers with an added measure of flexibility in order to expedite and improve remedial decisions.

The remedies described in the 2002 ROD were not implemented due to budget constraints. Fencing is in place to restrict access to the Site.

2.2 2009 SITE CHARACTERIZATION STUDY

In August 2009, an additional sampling investigation was arranged by the Mississippi Department of Environmental Quality (MDEQ) in consultation with EPA. The purpose of the additional work was to evaluate the current characterization of contaminants in soils and groundwater at the Site, develop aquifer characterization data, evaluate the shallow water bearing unit, and compare the results to those of previous investigations. This information was documented in the "Site Characterization Report", dated October 5, 2009, and is discussed in Section 5.1 of this document.

2.3 AMENDED RECORD OF DECISION

This Amended Record of Decision (AROD) fundamentally amends the groundwater component of the selected remedy called for in the 2002 ROD, as follows:

- Monitored natural attenuation of the groundwater beneath the Site, with long-term monitoring of the groundwater to verify that the migration of contaminated ground water is stabilized, there is no unacceptable discharge to surface water, and to confirm that affected ground water remains in the original area of contamination and the level of contamination in the groundwater is decreasing;
- Expansion of the soil excavation area to include additional source areas in the saturated zone to prevent leaching into the groundwater and meet cleanup goals.

In addition, this AROD makes the following minor changes to the engineering and institutional controls components of the selected remedy called for in the 2002 ROD:

- Engineering controls to control surface water runoff, dust, air quality, etc. and ensure the Remedial Action Objectives are met during and after putting the remedy in place;

- Institutional controls to restrict groundwater use, to be enforced by the State of Mississippi;
- Clarification of the Remedial Action Objectives.

3.0 HIGHLIGHTS OF COMMUNITY PARTICIPATION

3.1 1995 - 2002

In January 1995, EPA conducted community interviews with local officials, residents around the Site, and other parties in the area who were interested in the cleanup. On January 19, 1995 an open house was held for the public to inform them of the impending field work that was planned that month for the Remedial Investigation (RI).

A second public meeting was held on September 18, 1995 to inform the public what had been found during the RI field work, what data gaps still remained, and also that the Feasibility Study (FS) was being canceled due to the EPA's budget uncertainties at the time.

A third public meeting was held on November 16, 1999. At that meeting, the public was informed of the cleanup activity that was conducted as part of Superfund's removal action, which was from July to December 1999. The public was also informed of EPA's decision to re-start the Feasibility Study, and what the next steps in the NPL remedial process would be.

On July 20, 2000, a fourth public meeting was held to present to the public the Proposed Plan for remedial action at the Site. As with the first three meetings, this meeting was held at the Harrison Central School, 9th Grade library, due to its proximity to the Site. Three representatives from EPA attended the meeting and answered questions regarding the Site and the Proposed Plan. The public notice for this meeting was published in the Biloxi Sun-Herald on July 18, 2000. The public comment period on the Proposed Plan was July 5 through August 8 (the administrative record, or AR, for the proposed action was not available to the public until July 8, hence the 30 day comment period was extended to August 8). The AR was available to the public, at both the information repository maintained at the Orange Grove Public Library, 12031 Mobile Avenue, Gulfport, Mississippi, and at the EPA Region 4 Library located at 61 Forsyth St., S.W., in Atlanta, Georgia.

Responses to significant comments made during the July 20, 2000 public meeting, along with new relevant information received at that time, were included in the Responsiveness Summary of the November 17, 2002 Record of Decision. No other written or oral comments were received during this public comment period.

3.2 2011 PROPOSED PLAN

EPA issued an amended Proposed Plan as part of the process to amend the remedy. The MDEQ reviewed and concurred with the remedy described in the Proposed Plan for this amended remedial action prior to it being released for public comment. EPA published a notice of availability for the Proposed Plan in the Biloxi Sun-Herald newspaper and provided the public an opportunity to provide EPA written and oral comments from October 1 to October 31, 2011. No comments were received. The public was also given the opportunity to comment during the public meeting held on October 13, 2011 at the Crossroads Elementary School library, 10453 Klein Road, Gulfport, MS. Representatives from the EPA, MDEQ, Agency for Toxic Substances Disease Registry (ATSDR), Mississippi Secretary of State, and Mississippi Attorney General's offices attended the meeting and answered questions regarding the Site and the Proposed Plan. Comments from this public meeting are also included in Appendix A of this document. A copy of the transcript of that public meeting is available to the public as part of the Administrative Record (AR) upon which the Director of the Superfund Division, EPA Region 4, based the selection of the revised response action. The AR is located in the information repository at the Orange Grove Public Library, 12031 Mobile Avenue, Gulfport, Mississippi, and at the EPA Region 4 Library located at 61 Forsyth St., S.W., in Atlanta, Georgia.

This decision document presents the selected amended remedial actions for soil and groundwater at the Chemfax, Inc. Site, chosen in accordance with CERCLA (as amended) and the NCP. The decision for this Site is based on the Administrative Record. The requirements under Section 117 of CERCLA/SARA for public & state participation have been met for this Site.

4.0 SCOPE AND ROLE OF ACTION

In 1999, EPA conducted a removal action at this Site that resulted in approximately 2,000 tons of contaminated soils being removed off-site. The purpose of the removal action was to address imminent threats posed by the Site. Although the remedial action set forth by this Amended Record of Decision may address many of the same areas as the removal action, the purpose of this remedial action is to permanently address the long-term threats posed by the Site to human health and the environment.

Data obtained during the 1995 Remedial Investigation, the 1999 Supplemental Groundwater Investigation, and the 2009 Site Characterization Study indicate that the groundwater within the unconfined surficial aquifer at the Site is contaminated. The surficial groundwater at the Site is considered a potential source of drinking water. Data from the RI indicate that contaminated Site soils and sediments are contaminated at levels which could cause groundwater contamination in the future.

The remedial action described in this decision document addresses the remediation of the contaminated soils/sediments at the Site and for the monitored natural attenuation of the

groundwater beneath the Site. The remedial action addresses the entire Site and no additional response action is anticipated.

5.0 SUMMARY OF SITE CHARACTERISTICS

The 2002 Record of Decision summarizes the Site characteristics found during the 1995-2000 Remedial Investigation and Feasibility Study. That information briefly described below.

In January 1995, EPA conducted field work for the Remedial Investigation at the Site, and the results are documented in the January 1996 Final Report for the In-House Remedial Investigation report. In March 1999, further ground water sampling was also conducted, for the purpose of determining the current status of the ground water contamination. This was accomplished both by sampling the existing permanent monitoring wells (that were installed in 1995) and by sampling additional locations with direct push technology. Those results are documented in the March 1999 Supplemental Ground Water Characterization Report.

In 2009, a third investigation was conducted to assess the current soil and groundwater conditions at the Site, which were documented in the October 2009 Site Characterization Report. Table 1 below, from the 2009 Site Characterization Report, shows many of the contaminant concentrations have decreased in the soils from 1995 to 2009.

Table 1 - Soil Concentrations 1995 and 2009

Analyte	1995 Maximum Concentration (mg/kg)	2009 Maximum Concentration (mg/kg)
2-Methylnaphthalene	320	132
Acenaphthene	42	8.28
Anthracene	2	Not Detected
Benzo(a)anthracene	3.7	Not Detected
Benzo(a)pyrene	1.8	Not Detected
Benzo(b,k)fluoranthene	2	Not Detected
Chrysene	28	Not Detected
Dibenzofuran	0.051	Not Detected
Fluoranthene	2.8	Not Detected
Fluorene	4	6.77
Indeno(1,2,3-cd)pyrene	0.3	Not Detected
Naphthalene[1]	410	748/66.5
Phenanthrene	110	49.1
Pyrene	6.4	21.1
Benzene	5.4	3.12
Toluene	42	23.5
Ethylbenzene	110	30.7
Xylenes	280	40

APPENDIX E contains a comparison of the groundwater contaminant concentrations from 1999 to 2009. The 2009 investigation found contaminant levels had decreased somewhat since the 1999 work was done. While there has been no unacceptable discharge to surface water, nor has the contaminated ground water migrated appreciably from the original area of contamination, significant soil and groundwater contamination remains. Figure 3 and Figure 4 show the benzene levels in the shallow groundwater beneath the Site in 1999 and 2009, respectively.

6.0 CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES

As described in the 2002 Record of Decision, the Site is currently unused. Based on past and anticipated future use of this Site, and current zoning for the Site and the property adjacent to the Site, a commercial land use is the most likely and appropriate potential future use for this Site.

[1] The maximum naphthalene concentration detected (748 mg/kg) was not typical of those detected on the site. The second highest naphthalene concentration detected (66.5 mg/kg) is more representative of current conditions.

The Site and adjoining properties are commercially zoned. Under this classification, various industries are permitted including light industrial operations, etc.

Typically, EPA expects that the vast majority of sites with current commercial uses will continue to be used as commercial or industrial sites. Future commercial land use is likely to be a reasonable assumption where a Site such as this one is currently used for commercial purposes, is located in an area where the surroundings are zoned for commercial use, and the property is expected to continue to be used for commercial purposes.

In cases where a remedy is designed to be protective for a future commercial land use, it is normally necessary to include institutional controls to ensure that the future land use is restricted to a non-residential land use. The remedy set forth in this decision document will not include future institutional controls restricting land use since Site soils do not pose an unacceptable risk to the lifetime resident; however, institutional controls restricting groundwater use will be necessary until groundwater is cleaned up to levels protective for a residential land use.

Although currently unused in the area, the surficial groundwater at the Site is considered Class II, i.e., a current or potential source of drinking water. The performance standards for Class II groundwater are MCL's and non-zero MCLG's.

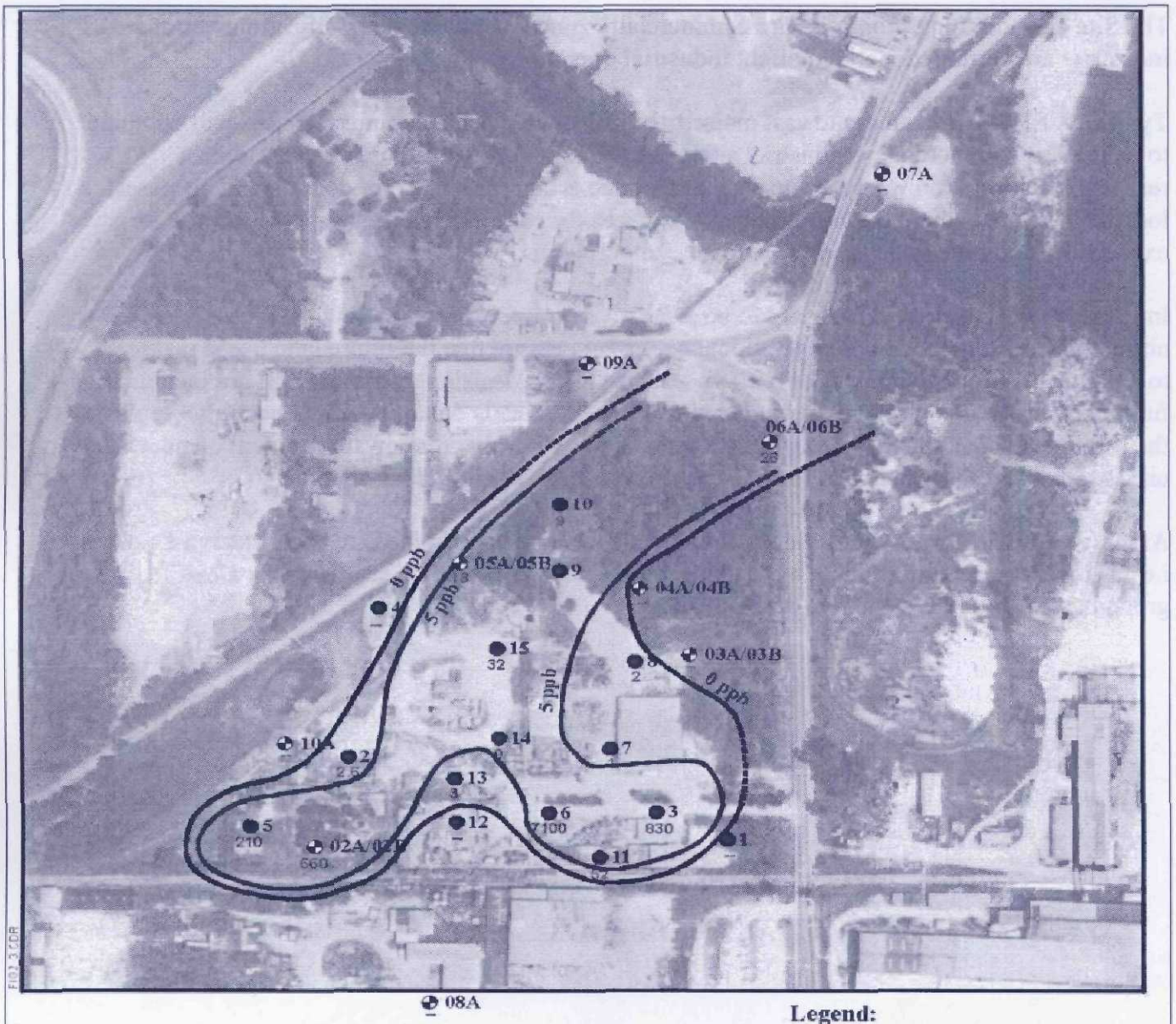

Figure 3 - Benzene Contamination in 1999

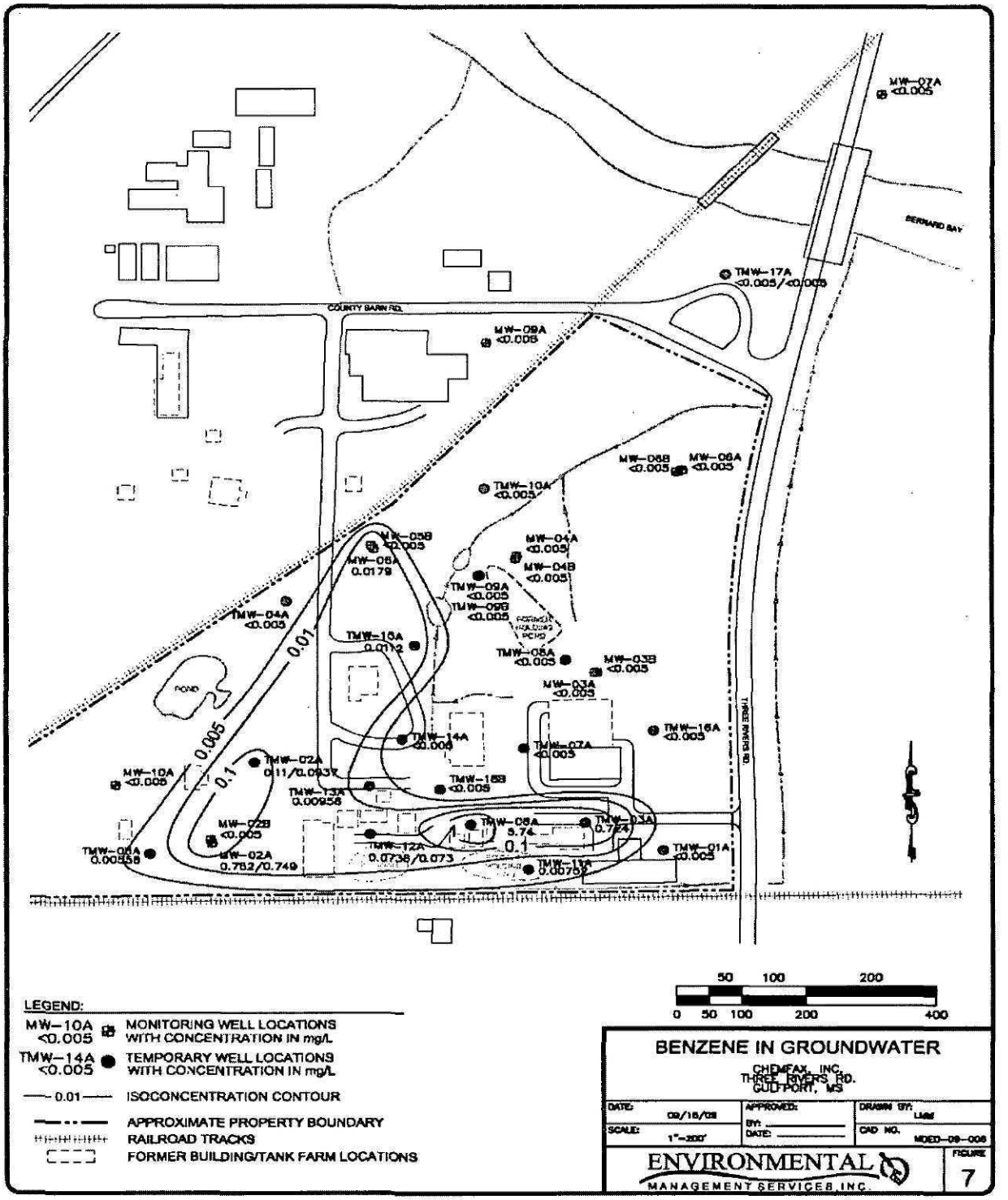

Figure 4 - Benzene Contamination in 2009

7.0 SUMMARY OF SITE RISKS

The 2002 Record of Decision summarizes the Site risks found during the 1995-2000 Remedial Investigation and Feasibility Study. Since then, Site conditions have not changed significantly to warrant a reevaluation of site risks. The Baseline Risk Assessment from the 2000 Feasibility Study is included in
APPENDIX D.

The Baseline Risk Assessment concluded the contaminants at the Site pose an unacceptable risk to human health and the environment. In particular, the risk characterization showed unacceptable risks to human health associated with the long- term ingestion of contaminated groundwater at the Site. The response action selected in this amended Record of Decision is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment. The soil remediation proposed for this Site is not based on human exposure to Site soils, but is instead based on the potential for contamination in the soils to leach to groundwater and result in an unacceptable risk to human health. The selected amended remedy is based on protection of the groundwater under the Site from contaminated soils, primarily due to the benzene contamination.

8.0 REMEDIAL ACTION OBJECTIVES

The RAOs for the Site are unchanged from the 2002 Record of Decision, from which this section is excerpted below, except as highlighted in italics.

The Remedial Action Objectives (RAOs) for the Chemfax, Inc. Site are:

1. Control migration and leaching of contaminants in Site soils and sediments to groundwater that could result in future groundwater contamination;

2. Prevent ingestion of groundwater having concentrations of contaminants in excess of performance standards;

3. Control migration and leaching of contaminants from Site soils, sediments, and groundwater to surface water or deeper drinking water resources;

4. *Restore groundwater to its beneficial use as a potential source of drinking water.*

To meet the first objective, EPA developed risk-based, Site-specific soil performance standards that are intended to prevent the leaching of soil contaminants into the groundwater at concentrations that would exceed the performance standards set forth in Section 12.1 of this decision document. Using EPA guidance, hydrogeologic parameters were used to mathematically

calculate these cleanup numbers for each contaminant. The equations and results are documented as Attachment A of the Feasibility Study Addendum, dated April 18, 2000.

The second objective will be met by implementing institutional controls to restrict future groundwater use.

The third objective will be met by implementing the soil and groundwater remedies described in this decision document; in addition, engineering controls will be put in place during the soil excavation, to control soil/sediment runoff to Bernard Bayou.

The fourth objective will be met by remediating, via Monitored Natural Attenuation, the groundwater to the performance standards shown in Section 12.1, thus restoring the shallow groundwater to drinking water standards.

9.0 DESCRIPTION OF ALTERNATIVES FOR SOILS/SEDIMENTS AND GROUNDWATER REMEDIATION

The 2002 Record of Decision summarizes the descriptions of six alternatives for soils/sediments and five alternatives for groundwater remediation, as taken from the Feasibility Study. Section 9.1 below is excerpted from the 2002 Record of Decision and is the original description of Soils Alternative No. 6, which remains unchanged, except to include additional soil excavation. Section 9.1.1 summarizes the updated costs for the soils remedy. Section 9.2 summarizes the original description of Groundwater Alternative 2 (Limited Action/MNA). Section 9.2.1 below describes the updated costs for the groundwater remedy.

9.1 SOILS ALTERNATIVE NO. 6 - EXCAVATION, OFF-SITE TRANSPORTATION, AND SUBTITLE D DISPOSAL (2002 RECORD OF DECISION)

The following is taken from the 2002 Record of Decision. Note that the text erroneously cites Subtitle C disposal. Excavated soils/sediments will be profiled prior to their proper disposal at an appropriate facility, but it is anticipated that most, if not all, Site soils will meet the requirements for Subtitle D disposal.

Est. Capital Cost: $909,000
Est. Annual O&M Cost: $65,000
Est. Present Worth: $1,709,990
Est. Implementation Time: 1 year

This alternative consists of transporting contaminated surface/subsurface soils and sediments off-Site to a RCRA secured Subtitle C landfill. These excavated soils and sediments are estimated to have a volume of 14,900 cubic yards. After any required modification of the existing rail spur and installation of a loading ramp on the Chemfax Site, excavation of soils would begin. Off-site shipment of soil in covered "gondola" railcars would be the preferred method of transportation.

This alternative will remove from the Site all contaminated soils above performance standards set forth in this document.

Water would be used to minimize fugitive dust emissions during soil excavation, transport, and handling. Any stockpiles of material during interim storage would be covered by tarpaulins or plastic sheeting to minimize fugitive dust and run on/runoff emissions. Surface water runoff, fugitive emissions and excavated soils would be monitored to ensure that the RAOs were being met.

After removal of all applicable contaminated soils the Site will be backfilled with clean soil and vegetation planted.

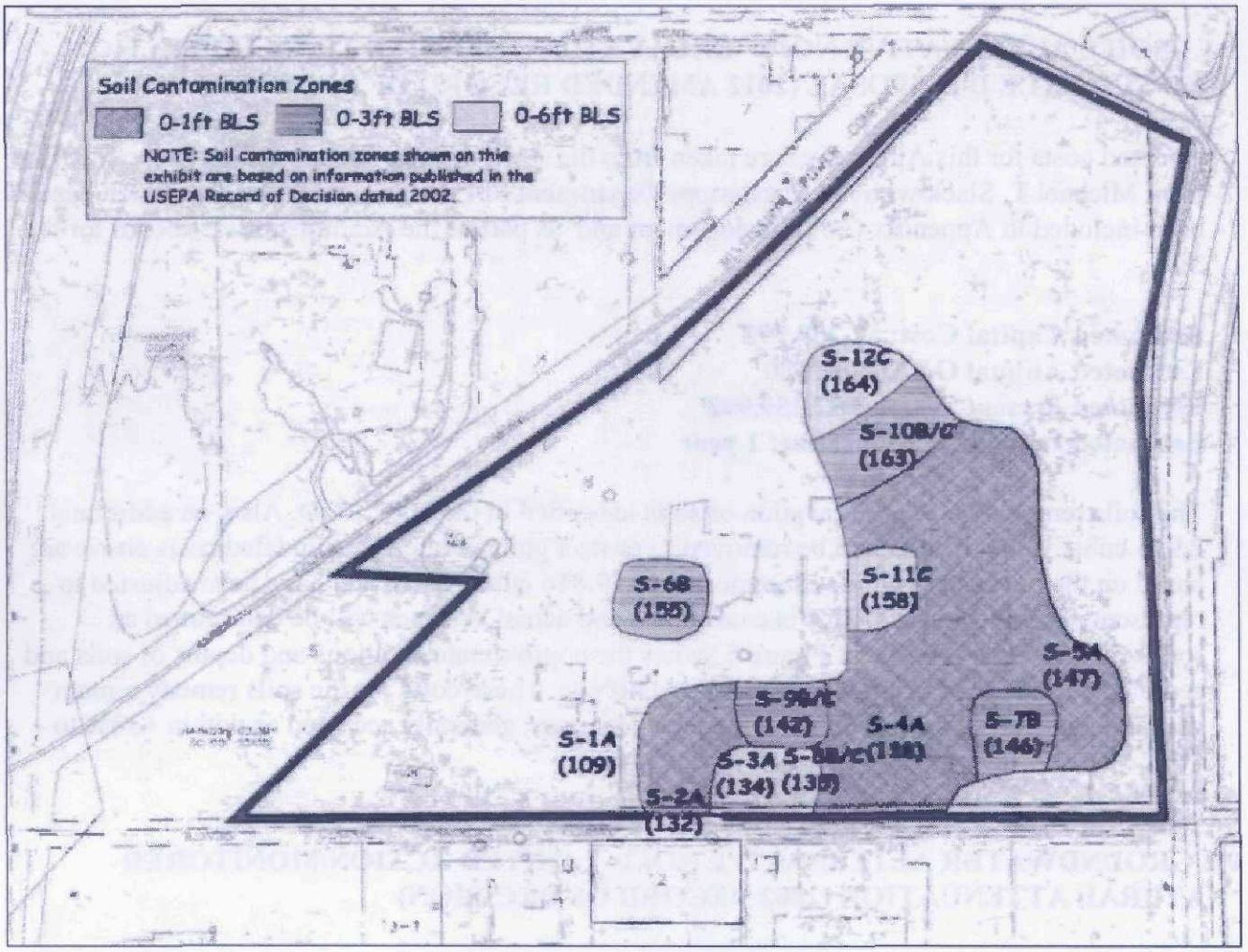

Figure 5 – Estimated Location and Depth of Soils to be Excavated

9.1.1 SOILS ALTERNATIVE NO. 6 - EXCAVATION, OFF-SITE TRANSPORTATION, AND SUBTITLE D DISPOSAL (2012 AMENDED RECORD OF DECISION)

Updated costs for this Alternative are taken from the April 6, 2010 Memorandum to the Site File from Michael T. Slack with the Mississippi Department of Environmental Quality, which has been included in Appendix C of this document and as part of the Administrative Record for the Site.

Estimated Capital Cost: $2,259,992
Estimated Annual O&M Cost: $0
Estimated Present Worth: $2,259,992
Estimated Implementation Time: 1 year

The soils remedy includes excavation of soils identified in the 2002 ROD. Also, an additional 2,916 cubic yards of soils will be removed to protect groundwater. The updated costs above are based on the increased volume estimate, about 17,816 cubic yards, and have been adjusted to represent present day costs. This is an estimate and actual volumes will be determined as soil/sediment removal occurs. Figure 5 shows the approximate locations and depths of soils and sediments that will be removed and disposed off site. These costs for the soils remedy remain within an expected range of engineering cost estimates, generally accepted as within +30% to -50%.

9.2 GROUNDWATER ALTERNATIVE NO. 2 - LIMITED ACTION/MONITORED NATURAL ATTENUATION (2002 RECORD OF DECISION)

The following is taken from the 2002 ROD. Note that the second to last paragraph erroneously cites a description under Alternative 1 of continued groundwater monitoring; however, Alternative 1 in the 2002 ROD did not include such a description.

Estimated Capital Cost: $115,000
Estimated Annual O&M Cost: $157,700
Estimated Present Worth: $533,113
Estimated Implementation Time: <1 year

Under the limited action alternative, no action would be taken to remediate contaminated groundwater at the Site, unless a specified period of monitoring indicates that groundwater contaminant levels are not decreasing as a result of natural processes and/or activities undertaken for the remediation of soil.

Alternative 2 would essentially serve as a monitored natural attenuation (MNA) alternative. Natural attenuation is not an active technology, but at some sites, physical or biological processes

(unassisted by human intervention) may effectively reduce contaminant concentrations such that remedial objectives in the contaminant plume or certain portions of the plume are achieved in a reasonable time frame without active remediation. Performance monitoring is a critical component of this remediation approach because monitoring is needed to ensure that the remedy is protective and that natural processes are reducing contamination levels as expected.

Alternative 2 would also include implementation of institutional measures to control, limit, and monitor activities on-site. The objectives of institutional controls are to prevent prolonged exposure to contaminant concentrations, control future development, and prevent the installation of wells within the contaminated plume boundary. These objectives would be accomplished by monitoring contaminated media at the Site, and limiting use and access by placing restrictions on the properties within the contaminated plume area until cleanup goals are reached. The effectiveness of institutional controls would depend on their continued implementation.

The alternative also would include the continued monitoring of groundwater at the Site, as described under Alternative 1. Groundwater sampling would be conducted every five years and would allow EPA to assess the ongoing risks to human health and the environment posed by the Chemfax Site. The evaluations would be based on the data collected from media monitoring.

9.2.1 GROUNDWATER ALTERNATIVE NO. 2 - LIMITED ACTION/MONITORED NATURAL ATTENUATION (2012 AMENDED RECORD OF DECISION)

Updated costs for this Alternative are taken from the April 6, 2010 Memorandum to the Site File from Michael T. Slack with the Mississippi Department of Environmental Quality, which has been included as part of the Administrative Record for the Site.

Estimated Capital Cost: $0
Estimated Annual O&M Cost: $39,905
Estimated Present Worth: $285,713
Estimated Implementation Time: <1 year

These costs assume one annual sampling event for 100 years, with 15 groundwater samples and three surface water samples analyzed for each sampling event. However, the groundwater will be sampled annually until performance standards are reached.

The 2002 ROD states that MNA would not be appropriate due to the risk of potential impacts to Bernard Bayou. The 2009 Site Characterization Report groundwater evaluation indicates that existing contaminant concentrations will not migrate to Bayou Bernard at concentrations that will exceed surface water screening benchmarks, due to the slow rate of movement. Currently, there is no unacceptable discharge to surface water. The groundwater within the Site boundary poses a low risk of impacting Bernard Bayou, especially after the soil/sediment remedy is implemented. To ensure protection of human health while the MNA remedy is being implemented, institutional

controls restricting groundwater use will be implemented in the impacted areas, as described in the 2002 ROD. These will be enforced by the State of Mississippi until groundwater contaminant concentrations reach performance standards.

The timeframe estimated to complete the MNA remedy is longer than the estimate to construct and operate the pump-and-treat remedy (about 30 years). Current estimates indicate that cleanup levels will be attained throughout the contaminated portion of the shallow groundwater beneath the Site within approximately 100 years. This timeframe is reasonable as there is no anticipated need for this groundwater by the community. The surrounding community is serviced by municipal water systems, which withdraws groundwater from wells screened 700 or more feet below ground surface, and are unaffected by the Site contaminants. There is no information that suggests the water bearing zone that currently supplies drinking water for human consumption is being used within one mile of the facility. Other wells in the area are industrial and are not used for drinking water. The 2009 Characterization Report also shows the shallow water bearing zone impacted by Chemfax operations does not supply any Public Water System, nor is it capable of yielding enough water to do so. The 2000 Feasibility Study Report states that a groundwater treatability study may need to be performed before the pump-and-treat remedy is implemented to determine if it is technically feasible and implementable. As the 2009 studies show, it is unlikely that a pump-and-treat remedy would be as effective as initially projected given the current understanding of the low productivity of the shallow contaminated aquifer and elevated levels of total dissolved solids.

In addition to the modeling estimates, although the soil remedy has not been implemented, most of the concentration levels for groundwater contaminants of concern (COCs) have decreased since 1999. This trend of declining contaminant levels has been confirmed in sampling over a period of ten years, indicating that when the soil remedy is implemented, MNA will have a greater probability to be effective, thus reducing uncertainty of the modeling predictions (APPENDIX E). As a result, EPA and the State do not believe it is necessary to select a contingent remedy for this amended ROD.

10.0 SUMMARY OF THE COMPARATIVE ANALYSIS OF ALTERNATIVES FOR SOILS/SEDIMENTS REMEDIATION

This section of the AROD provides the basis for determining which alternative provides the best balance with respect to the statutory criteria in Section 121 of CERCLA and in Section 300.430 of the NCP. The major objectives of the April 2000 Feasibility Study were to develop, screen, and evaluate alternatives for the remediation of soil/sediments and groundwater at the Chemfax, Inc. Site. The remedial alternatives selected from the screening process were evaluated using the following nine evaluation criteria:

- Overall protection of human health and the environment
- Compliance with applicable and/or relevant Federal or State public health or environmental standards (ARARS)

- Long-term effectiveness and permanence
- Reduction of toxicity, mobility, or volume of hazardous substances or contaminants
- Short-term effectiveness, or the impacts a remedy might have on the community, workers, or the environment during the course of implementing it
- Implementability, that is, the administrative or technical capacity to carry out the alternative
- Cost-effectiveness considering costs for construction, operation and maintenance of the alternative over the life of the project, including additional costs should it fail
- Acceptance by the State
- Acceptance by the Community

The NCP categorizes the nine criteria into three groups:

(1) Threshold Criteria - overall protection of human health and the environment and compliance with ARARs (or invoking a waiver) are threshold criteria that must be satisfied in order for an alternative to be eligible for selection;

(2) Primary Balancing Criteria - long-term effectiveness and permanence; reduction of toxicity, mobility, or volume; short-term effectiveness; implementability, and cost are primary balancing factors used to weigh major trade-offs among alternative waste management strategies; and

(3) Modifying Criteria - state and community acceptance are modifying criteria that are formally taken into account after public comment is received on the proposed plan and incorporated in the ROD or AROD.

The selected alternative must meet the threshold criteria and comply with all ARARs or be granted a waiver for compliance with ARARs. Any alternative that does not satisfy both of these requirements is not eligible for selection. The Primary Balancing Criteria are the technical criteria upon which the detailed analysis is primarily based. The final two criteria, known as Modifying Criteria, assess the public's and the state agency's acceptance of the alternative. Based on these final two criteria, EPA may modify aspects of a specific alternative.

10.1 OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

In Sections 10.1 through 10.9, the 2002 ROD summarized an evaluation of alternatives for remediating soils/sediments and groundwater at the Site, with a comparison made between each for achievement of a specific criterion. Here, the soils/sediments summaries will not be included as part of Sections 10.1 through 10.9 since the soils/sediments remedy is not being significantly changed. See Table 2 on page 25 for a description of each groundwater alternative, as taken from the 2002 ROD.

Overall protection of human health and the environment addresses whether each alternative provides adequate protection of human health and the environment and considers how risks posed through each exposure pathway are eliminated, reduced, or controlled, through treatment, engineering controls, and/or institutional controls. A No Action alternative is required by CERCLA as a baseline from which to compare the other alternatives. For groundwater, the No Action alternative is not protective of human health and the environment. The contaminated groundwater documented at the Site could possibly be used for drinking water in the future, and would possibly impact Bernard Bayou. Because a No Action alternative would not be protective of human health and the environment, it will not be further discussed here for the remaining criteria.

Alternatives 3, 4, and 5, as described for groundwater, would each be protective of human health and the environment, whereas Alternative 2 would provide a lesser degree of protection since a longer timeframe would be required to determine if a contingent remedy would be implemented.

10.2 COMPLIANCE WITH ARARS

Section 121(d) of CERCLA requires that remedial actions at CERCLA sites attain legally applicable or relevant and appropriate Federal and State requirements, standards, criteria, and limitations which are collectively referred to as ARARs, unless such ARARs are waived under CERCLA section 121(d)(4). The 2002 Record of Decision's Table 10 listed the chemical-, location-, and action-specific ARARs for the Site.

Alternatives 3, 4, and 5 would comply with all ARARs. These alternatives would satisfy all drinking water standards through treatment. Depending on the discharge method, each of these alternatives would comply with the substantive requirements of the Underground Injection Control program or the NPDES program.

The FS stated that unless a groundwater contingent remedy was implemented, Alternative 2 would not achieve chemical-specific ARARs (FS, pg. 5-28). However, new information from the 2009 groundwater sampling indicates that Alternative 2 is expected to achieve ARARs without a contingent remedy, albeit under a longer timeframe than under Alternatives 3, 4, and 5.

10.3 LONG-TERM EFFECTIVENESS AND PERMANENCE

Long- term effectiveness and permanence refers to expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time, until and once performance standards have been met. This criterion also considers the adequacy and reliability of controls.

Alternatives 3, 4, and 5, as described for groundwater, would provide effective, permanent remedies over the long-term, and are ranked equally for this criterion. However, it is noted that

Based on recent data, Alternative 4 is likely to achieve groundwater performance standards in less than time than Alternatives 3 and 5.

Compared to Alternatives 3, 4, and 5, Alternative 2 would provide a lesser degree of long-term effectiveness and permanence due to the longer timeframe to attain cleanup goals.

EPA evaluated five alternatives identified in the Feasibility Study (FS) for remediating contaminated groundwater at the Chemfax, Inc. Site. The following table lists each alternative, along with a short description, total present worth cost, and time to implement the remedy, but not to attain cleanup goals. See Section 4 of the FS for a complete discussion of each alternative.

Table 2- DESCRIPTION OF GROUNDWATER CLEANUP ALTERNATIVES

Alternative and Description	Total Cost ($ Thousands)	Implementation Time
ALTERNATIVE No. 1 - No Action The National Oil & Hazardous Substances Pollution Contingency Plan (NCP) requires that a No Action alternative be evaluated as part of the screening process, in order to provide a baseline for comparison to other alternatives. Under this alternative, no further actions would be taken to address the groundwater at the Chemfax, Inc. Site.	98	0
ALTERNATIVE No. 2 -Limited Action This alternative would also involve limited action to address the groundwater at the Site, including the periodic monitoring discussed for Alternative 1. However, Alternative 2 would be implemented with the anticipation that natural processes can alone reduce the contaminant levels in the groundwater. Alternative 2 would also include institutional controls that would restrict access to and use of the contaminated aquifer.	533 *285.7 (amended)*	<1 year
ALTERNATIVE No. 3 -Pump and Treat With Physical and/or Chemical Treatment Alternative 3 would consist of an extraction system that would consist of wells or other mechanisms to pump groundwater to an on-site wastewater treatment system. The treated groundwater could then be discharged either to the Publicly Owned Treatment Works (POTW), injection wells, or surface water. The treatment system would consist of air stripping for the VOC compounds, whereas the PAH compounds would likely require an activated carbon process, also.	1,732	30 years
ALTERNATIVE No. 4 - In-situ Treatment Alternative 4 would treat the groundwater in place, without pumping it to the surface. The treatment process would consist of air sparging, soil vapor extraction, bioaugmentation, or a combination of the three.	2,305	1 year
ALTERNATIVE No. 5 - Permeable Treatment Bed Alternative Five consists of construction of a permeable treatment bed (or treatment wall). As contaminated groundwater flows through the treatment wall, contaminants are treated via physical, chemical, and/or biological processes. The natural gradient of the groundwater can be used to provide continuous flow across the treatment wall, as opposed to pumping. Additional Site characterization would be required for this alternative, to optimize the design of the treatment bed.	3,037	30 years

10.4 REDUCTION OF TOXICITY, MOBILITY, OR VOLUME

Reduction of toxicity, mobility, or volume refers to the anticipated performance of the treatment technologies that may be included as part of a remedy.

Alternatives 3, 4, and 5, as described for groundwater, each call for active treatment of the contaminated groundwater to performance standards, and are ranked equally for this criterion.

Although MNA processes do permanently reduce the volume of contaminants, compared to Alternatives 3, 4, and 5, Alternative 2 would provide a lesser degree of reduced toxicity, mobility, or volume.

10.5 SHORT-TERM EFFECTIVENESS

Short-term effectiveness addresses the period of time needed to implement the remedy, and considers any adverse impacts that may be posed to workers and the community during construction and operation of the remedy.

Alternatives 3, 4, and 5, as described for groundwater, are each ranked equally with respect to short-term effectiveness.

Alternative 2 involves no additional on-site construction. Alternative 2 provides a higher degree of short-term effectiveness since there are no short-term risks to site workers.

10.6 IMPLEMENTABILITY

Implementability addresses the technical and administrative feasibility of a remedy from design through construction and operation. Factors such as availability of services and materials, administrative feasibility, and coordination with other governmental entities are also considered.

Alternatives 3, 4, and 5, as described for groundwater, would each require significant effort during Remedial Design before the remedy could be implemented. Alternative 3 would require selection of a specific pump-and-treat alternative. Alternative 4 would require the design of an in-situ treatment system, whereas Alternative 5 would require the design of a Site-specific permeable treatment wall. However, Alternative 3 is ranked higher for this criterion because pump-and-treat technology is significantly less complex technically.

Alternative 2 involves less effort—primarily monitoring—and thus provides a higher degree of implementability since there are limited efforts required during Remedial Design for this alternative.

10.7 COST

Cost estimates for the five groundwater alternatives are shown in Table 2. Total costs for each alternative include estimated capital costs, as well as associated operation and maintenance (O&M) costs after the alternative is implemented. Present worth costs were calculated for a period of 30 years using an interest rate of 7%. All costs shown in Table 2 are taken from the April 2000 Feasibility Study and the June 2000 Feasibility Study Addendum.

As shown in Section 9.2.1, the updated cost for Alternative 2, Limited Action/Monitored Natural Attenuation, is now $285,713, as compared to the 2002 ROD cost estimate of $533,113.

For groundwater, costs range from $98,406 for Alternative 1 - No Action, to $3,036,849 for Alternative 5 - Permeable Treatment Bed.

10.8 STATE ACCEPTANCE

The State of Mississippi, as represented by the Mississippi Department of Environmental Quality (MDEQ), has assisted in the cleanup process through the review of RI/FS documents, and has also submitted comments on the State's behalf for the selected remedy documented in this decision document. Their letter of supporting the amended remedy is included in Appendix B.

10.9 COMMUNITY ACCEPTANCE

Based on the comments expressed at the October 13, 2011 public meeting and recorded in the transcript thereof (no written comments were received during the comment period), the community in the vicinity of the Site does not oppose the selected remedies as described within this Amended Record of Decision, for the impacted soils, sediments, and groundwater at the Site. A copy of the comments provided during the October 13, 2011 public meeting are included in APPENDIX A.

11.0 PRINCIPAL THREAT WASTES

The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a Site wherever practicable. In general, principal threat wastes are those source materials which cannot be contained in a reliable manner or would present a significant risk to human health or the environment should exposure occur. Contaminated groundwater is not generally considered to be a source material.

At the Chemfax, Inc. Site the greatest current risk would come from the surficial groundwater, were it to be used as a drinking water source. The contaminated soils and/or sediments that remain at the Site will continue to contaminate the groundwater at levels above drinking water

levels, if left unremediated. The selected remedy set forth in this Record of Decision will address the remaining threats in the soils/sediment through excavation and off-site disposal. None of the remaining contaminated source material at the Site constitutes principle threat source material.

12.0 THE AMENDED REMEDY

Based on CERCLA requirements, the NCP, the detailed analysis of alternatives and comments from both the State and the community, EPA has determined that, for those alternatives evaluated for groundwater, Alternative 2 (Limited Action/Monitored Natural Attenuation) constitutes the best overall groundwater remedial action for the Site. Excavation with off-site disposal remains the selected remedy for the contaminated soils/sediment at the Site.

Under the amended remedy, groundwater at the Site will be monitored annually until cleanup goals are met. Also, under the amended remedy, institutional controls will be implemented to control, limit, and monitor activities on-site, with the primary purpose of preventing exposure to contaminated groundwater.

As noted in Section 9.2.1, the present worth cost for implementing the amended groundwater remedy will be about $285,713, assuming a 100 year time frame for monitoring. The estimated present worth cost to implement the soils/sediment remedy is about $2,259,992. The total cost to perform both remedial actions is approximately $2,545,705.

12.1 PERFORMANCE STANDARDS

The groundwater performance standards are not being amended and are listed below:

Benzene	5 parts per billion (ppb)
Toluene	1,000 ppb
Ethylbenzene	700 ppb
Naphthalene	310 ppb
Methyl butyl ketone	630 ppb
2-Methylnaphthalene	310 ppb
Bis(2-chloroethyl)ether	2 ppb[2]

Soil performance standards are not being amended and remain unchanged as shown in the 2002 Record of Decision:

[2] In the case of bis(2-chloroethyl)ether, current laboratory procedures do not quantify this compound below a value of 0.8 ppb. The 2 ppb performance standard for bis(2-chloroethyl)ether is based on a residential cancer risk level of 1×10^{-4}.

Benzene	0.04 parts per million (ppm)
Toluene	8.4 ppm
Ethylbenzene	5.9 ppm
Naphthalene	8.4 ppm

12.2 EXPECTED OUTCOMES OF THE SOILS/SEDIMENTS AND AMENDED GROUNDWATER REMEDIES

The Site is currently zoned for industrial and commercial use. However, upon implementation of the soils/sediments remedy (excavation and off-site disposal), it is anticipated that the Site soils would be available for a residential land use. An unrestricted land use would not be available until the groundwater performance standards are met. It is anticipated that the groundwater performance standards can be met within a 100 year time frame.

Since the Site's value is enhanced by its proximity to the Interstate 10 interchange at Highway 49, restoring the Site to a productive use will also restore lease payments to the County that are currently being unrealized. This restoration should help revitalize the local community which was heavily impacted by Hurricane Katrina, and will, at a minimum, remove a potential source of urban blight.

Achievement of the soil/sediment and groundwater performance standards will also remove the potential for any impact to Bernard Bayou.

13.0 STATUTORY DETERMINATION

Under Section 121 of CERCLA, 42 U.S.C. § 9621, EPA must select remedies that are protective of human health and the environment, comply with applicable or relevant and appropriate requirements (unless a statutory waiver is justified), are cost effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In addition, CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduce the volume, toxicity, or mobility of hazardous substances as their principal element. The following sections discuss how the amended remedy for groundwater meets these statutory requirements.

13.1 PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

The amended groundwater remedy provides protection of human health and the environment by eliminating, reducing, and controlling risk as the natural attenuation processes are expected to gradually decrease potential risks from exposure to contaminated groundwater. In the interim, institutional controls to prevent groundwater use will prevent exposure to groundwater that exceeds performance standards. Implementation of this remedy will not pose unacceptable short-term risks or cross media impact.

13.2 ATTAINMENT OF THE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs)

This amended groundwater remedy will comply with the substantive requirements of federal and state laws and regulations that have been determined to constitute applicable or relevant and appropriate requirements (ARARS). Applicable requirements are those cleanup standards, control standards, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a Superfund site. Relevant and appropriate requirements are those cleanup standards, control standards, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that, while not applicable, address problems or situations sufficiently similar (relevant) to those encountered and are well-suited (appropriate) to circumstances at the particular Site. Other information and standards, such as health-based advisories, can be included in EPA's decision-making process as a "To Be Considered" (TBC).

Table 3 summarizes the ARARs for the soil and groundwater remedies.

Table 3 - ARARs and TBCs

Chemical-Specific ARARs and TBCs

Action	Requirements	Prerequisite	Citation
Restoration of Contaminated Groundwater	Shall not exceed the Safe Drinking Water Act National Revised Primary Drinking Water Regulations: maximum contaminant levels (MCLs) for organic contaminants specified in 40 C.F.R. § 141.61(a).	Presence of contaminants in groundwater that is designated as a potential source of drinking water Note: Mississippi does not classify groundwater based upon use. All groundwater is considered "waters of the State," and thus is a potential source of potable water. **Relevant and appropriate**	40 C.F.R. § 141.61(a)

Location-Specific ARARs and TBCs

Location	Requirements	Prerequisite	Citation
Presence of floodplain designated as such on a map	Shall consider alternatives to avoid, to the extent possible, adverse effects and incompatible development in the floodplain.	Federal actions that involve potential impacts to, or take place within, floodplains. **TBC**	Executive Order 11988 Section 2(a)(2)
Presence of wetlands	Requires Federal agencies to evaluate action to minimize the destruction, loss or degradation of wetlands and to preserve and enhance beneficial values of wetlands.	Federal actions that involve potential impacts to, or take place within, wetlands **TBC**	Executive Order 11990, Section 1(a)

Action-Specific ARARs and TBCs

Action	Requirements	Prerequisite	Citation
Monitoring Well Installation, Operation, and Decommission			
Construction of wells for environmental monitoring	Shall follow the substantive procedures and requirements specified in MDEQ's LW-3 regulations for construction of injection and monitoring wells	Installation of an environmental monitoring well **Relevant and appropriate**	MDEQ Regulation LW-3, Chap. XI(A)(1)(b)-(o); Chap. XI(A)(2)
Plugging and Decommissioning environmental monitoring well	Shall be decommissioned in accordance with substantive requirements set forth in MDEQ's LW-2 and LW-3 regulations.	Decommissioning monitoring wells **Relevant and appropriate**	MDEQ Regulation LW-3, Chap. XIII(F)(1)-(6); MDEQ Regulation LW-2, Chap. IV(G)
Waste Generation, Characterization, Segregation, and Storage – excavated soils/sediments, sludge, debris and secondary wastes (note: The State of Mississippi incorporates by reference the federal regulations governing waste generation, characterization, segregation, and storage. See MDEQ Regulations HW-1 (Sept. 29, 2008). Accordingly, only the federal regulations are cited here)			
Characterization of ***solid waste*** (all primary and secondary wastes)	Must determine if solid waste is hazardous waste or if waste is excluded under 40 C.F.R. § 261.4(b); and	Generation of solid waste as defined in 40 C.F.R. § 261.2 and which is not excludable under 40 C.F.R. § 261.4(a) **Applicable**	40 C.F.R. § 262.11(a)
	Must determine if waste is listed under 40 C.F.R. Part 261; or		40 C.F.R. § 262.11(b)

Action	Requirements	Prerequisite	Citation
	Must characterize waste by using prescribed testing methods or applying generator knowledge based on information regarding material or processes used		40 C.F.R. § 262.11(c)
	Must refer to 40 C.F.R. Parts 261, 262, 264, 265, 266, 268, and 273 for possible exclusions or restrictions pertaining to management of the specific waste	Generation of solid waste that is determined to be hazardous – **Applicable**	40 C.F.R. § 262.11(d)
Characterization of ***hazardous waste*** (all primary and secondary wastes), if waste is determined to be hazardous	Must obtain a detailed chemical and physical analysis on a representative sample of the waste(s), which at a minimum contains all the information that must be known to treat, store, or dispose of the waste in accordance with pertinent sections of 40 C.F.R. §§ 264 and 268	Generation of RCRA hazardous waste for storage, treatment, or disposal **Applicable**	40 C.F.R. § 264.13(a)(1)
	Must determine the underlying hazardous constituents, as defined in 40 C.F.R. § 268.2(i), in the waste	Generation of RCRA characteristic hazardous waste for storage, treatment, or disposal **Applicable**	40 C.F.R. § 268.9(a)
	Must determine if the waste is restricted from land disposal under 40 C.F.R. § 268, *et seq.* by testing in accordance with prescribed methods or use of generator knowledge of waste		40 C.F.R. § 268.7

Action	Requirements	Prerequisite	Citation
	Must determine each EPA Hazardous Waste Number (Waste Code) to determine the applicable treatment standards under 40 C.F.R. § 268.40, *et seq.*		40 C.F.R. § 268.9(a)
Temporary on-site storage of hazardous waste in containers, if determined to be hazardous	A generator may accumulate hazardous waste at the facility provided that: • waste is placed in containers that comply with 40 C.F.R. §§ 265.171-173; and	Accumulation of RCRA hazardous waste on-site as defined in 40 C.F.R. § 260.10 **Applicable**	40 C.F.R. § 262.34(a); 40 C.F.R. § 262.34(a)(1)(i)
	• the date upon which accumulation begins is clearly marked and visible for inspection on each container		40 C.F.R. § 262.34(a)(2)
	• container is marked with the words "hazardous waste" or		40 C.F.R. § 262.34(a)(3)
	• container may be marked with other words that identify contents	Accumulation of 55 gals. or less of RCRA hazardous waste at or near any point of generation **Applicable**	40 C.F.R. § 262.39(c)(1)
Use and management of hazardous waste in containers, if determined to be hazardous	If container is not in good condition or if it begins to leak, must transfer waste into container in good condition	Storage of RCRA hazardous waste in containers **Applicable**	40 C.F.R. § 265.171

Action	Requirements	Prerequisite	Citation
	Use container made with lined materials compatible with waste to be stored so that the ability of the container is not impaired		40 C.F.R. § 265.172
	Keep containers closed during storage, except to add/remove waste		40 C.F.R. § 265.173(a)
	Open, handle, and store containers in a manner that will not cause containers to rupture or leak		40 C.F.R. § 265.173(b)
Storage of ***hazardous waste in a container area,*** if determined to be hazardous	Area must have a containment system designed and operated in accordance with 40 C.F.R. § 264.175(b)	Storage of RCRA hazardous waste in containers *with free liquids* **Applicable**	40 C.F.R. § 264.175(a)
	Area must be sloped or otherwise designed and operated to drain liquid from precipitation, or Containers must be elevated or otherwise protected from contact with accumulated liquid	Storage of RCRA hazardous waste in containers that do not contain free liquids **Applicable**	40 C.F.R. § 264.175(c)
Temporary on-site storage of ***remediation waste in staging piles*** (e.g., excavated soils), if determined to be hazardous	May be temporarily stored (including mixing, sizing, blending, or other similar physical operations intended to prepare the wastes for subsequent management or treatment) at a facility if used only during remedial operations provided that the staging pile will be designed to:	Accumulation of ***non-flowing hazardous remediation waste*** (or remediation waste otherwise subject to land disposal restrictions) as defined in 40 C.F.R. § 260.10	40 C.F.R. § 264.554(a)(1)

Action	Requirements	Prerequisite	Citation
		Applicable	
	• facilitate a reliable, effective, and protective remedy		40 C.F.R. § 264.554(d)(1)(i)
	• prevent or minimize releases of hazardous wastes and constituents into the environment, and minimize or adequately control cross-media transfer as necessary to protect human health and the environment (e.g., use of liners, covers, run-off/run-on controls)		40 C.F.R. § 264.554(d)(1)(ii)
	• not operate for more than two years from first time remediation waste placed in staging pile or up to an additional 180 days beyond the operating term limit if the continued operation of the staging pile will not pose a threat to human health and the environment and is necessary to ensure timely and efficient implementation of remedial actions at the facility		40 C.F.R. §§ 264.554(d)(1)(iii) and 264.554(i)(1)
	In setting standards and design criteria, must consider the following factors: • length of time pile will be in		40 C.F.R. § 264.554(d)(2)(i)-(vi)

Action	Requirements	Prerequisite	Citation
	operation; • volumes of waste intended to store in pile; • physical and chemical characteristics of waste to be stored in unit • potential for releases from the unit • hydrogeological and other relevant environmental conditions at the facility that may influence the migration of any potential releases; and • potential for human and environmental exposure to potential releases from the unit		
	Must not place in the same staging pile unless in compliance with 40 C.F.R. § 264.17(b)	Storage of hazardous waste that qualifies as "incompatible waste" (as defined in 40 C.F.R. § 260.10) in staging pile – **Applicable**	40 C.F.R. § 264.554(f)(1)
	Must separate the incompatible materials, or protect them from one another using a dike, berm, wall, or other device	Storage of hazardous waste that qualifies as "incompatible waste" (as defined in 40 C.F.R. § 260.10) in staging pile – **Applicable**	40 C.F.R. § 264.554(f)(2)

Action	Requirements	Prerequisite	Citation
	Must not pile remediation waste on same base where incompatible wastes or materials were previously piled unless the base has been sufficiently decontaminated in compliance with 40 C.F.R. § 264.17(b)	Storage of hazardous waste that qualifies as "incompatible waste" (as defined in 40 C.F.R. § 260.10) in staging pile – **Applicable**	40 C.F.R. § 264.554(f)(3)
Closure of staging piles of remediation waste	Must be closed within 180 days after the operating term by removing or decontaminating all remediation waste, contaminated containment system components, and structures and equipment contaminated with waste and leachate	Storage of remediation waste (including hazardous waste and solid waste, as defined in 40 C.F.R. § 260.10) in staging pile in *previously contaminated area* **Applicable**	40 C.F.R. § 264.554(j)(1)
	Must decontaminate contaminated sub-soils in a manner that EPA determines will protect human health and the environment		40 C.F.R. § 264.554(j)(2)
	Must be closed within 180 days after the operating term according to 40 C.F.R. §§ 264.258(a) and 264.111 or 265.258(a) and 265.111	Storage of remediation waste (including hazardous waste and solid waste, as defined in 40 C.F.R. § 260.10) in staging pile *in uncontaminated area* **Applicable**	40 C.F.R. § 264.554(k)
Waste Treatment and Disposal – excavated soil/sediment, sludge, debris, and secondary wastes (note: The State of Mississippi incorporates by reference the federal regulations governing waste generation, characterization, segregation,			

Action	Requirements	Prerequisite	Citation
and storage. See MDEQ Regulations HW-1 (Sept. 29, 2008). Accordingly, only the federal regulations are cited here)			
Disposal of RCRA hazardous waste in land-based unit	May be land disposed if it meets the requirements in the table "Treatment Standards for Hazardous Waste" at 40 C.F.R. § 268.40 before land disposal	Land disposal, as defined in 40 C.F.R. § 268.2, of restricted RCRA waste **Applicable**	40 C.F.R. § 268.40(a)
	Are not prohibited if the wastes no longer exhibit a prohibited characteristic at the point of land disposal, unless the wastes are subject to a specified method of treatment other than DEACT in 40 C.F.R. § 268.40 or are D003 reactive cyanide	Land disposal of restricted RCRA characteristically hazardous wastes – **Applicable**	40 C.F.R. § 268.1(c)(4)(iv)
Disposal of RCRA wastewaters in a CWA wastewater treatment unit	Are not prohibited, unless the wastes are subject to a specified method of treatment other than DEACT in 40 C.F.R. § 268.40 or are D003 reactive cyanide	Restricted RCRA characteristic hazardous wastewaters managed in a wastewater treatment system that is NPDES permitted – **Applicable**	40 C.F.R. § 268.1(c)(4)(i)
Disposal of RCRA ***hazardous waste soil*** in a land-based unit	Must be treated according to the alternative treatment standards of 40 C.F.R. § 268.49(c) or according to the UTSs specified in 40 C.F.R. § 268.48 applicable to the listed and/or characteristic waste contaminating the soil prior to land disposal	Land disposal, as defined in 40 C.F.R. § 268.2, of restricted hazardous soils – **Applicable**	40 C.F.R. § 268.49(b)
Treatment of RCRA ***hazardous waste soil***	Prior to land disposal, all "constituents subject to treatment," as defined in 40	Treatment of restricted hazardous waste soils –	40 C.F.R. § 268.49(c)(1)

Action	Requirements	Prerequisite	Citation
	C.F.R. § 268.49(d), must be treated as follows:	**Applicable**	
	• For non-metals (except carbon disulfide, cyclohexanone, and methanol), treatment must achieve a 90 percent reduction in total constituent concentrations, except as provided in 40 C.F.R. § 268.49(c)(1)(C)		40 C.F.R. § 268.49(c)(1)(A)
	• For metals and carbon disulfide, cyclohexanone, and methanol, treatment must achieve a 90 percent reduction in total constituent concentrations as measure in leachate from the treated media (tested according to TCLP) or 90 percent reduction in total constituent concentrations (when a metal removal technology is used), except as provided in 40 C.F.R. § 268.49(c)(1)(C)		40 C.F.R. § 268.49(c)(1)(B)
	• When treatment of any constituent subject to treatment to a 90 percent reduction standard would result in a concentration less than 10 times the Universal Treatment Standard (UTS) for that		40 C.F.R. § 268.49(c)(1)(C)

Action	Requirements	Prerequisite	Citation
	constituent, treatment to achieve constituent concentrations less than 10 times the UTS is not required. UTS are identified in 40 C.F.R. § 268.48 Table UTS		
	In addition to the treatment requirement required by paragraph (c)(1) of this section, soils must be treated to eliminate these characteristics	Land disposal of soils that exhibit the characteristics of RCRA hazardous waste--ignitability, corrosivity, or reactivity – **Applicable**	40 C.F.R. § 268.49(c)(2)
Transportation of hazardous waste ***on-site***	The generator manifesting requirements of 40 C.F.R. § 262.20-262.32(b) do not apply. Generator or transporter must comply with the requirements set forth in 40 C.F.R. § 263.30 and 263.31 in the event of a discharge of hazardous waste on a private or public right-of-way.	Transportation of hazardous wastes on a public or private right-of-way within or along the border of contiguous property under the control of the same person, even if such contiguous property is divided by a public or private right-of-way – **Applicable**	40 C.F.R. § 262.20(f)
Transportation of hazardous waste ***off-site***	Must comply with the generator requirements of 40 C.F.R. § 262.20-262.23 for manifesting, § 262.30 for packaging, § 262.31 for labeling, §	Off-site transportation of RCRA hazardous waste **Applicable**	40 C.F.R § 262.10(h)

Action	Requirements	Prerequisite	Citation
	262.32 for marking, § 262.33 for placarding, §§ 262.40 and 262.41(a) for record keeping requirements, and § 262.12 to obtain EPA ID number		
	Must comply with the requirements of 40 C.F.R. § 263.11-263.31	Transportation of hazardous waste within the United States requiring a manifest – **Applicable**	40 C.F.R. § 263.10(a)
	A transporter who meets all applicable requirements of 49 C.F.R. §§ 171-179 and the requirements of 40 C.F.R. §§ 263.11 and 263.31 will be deemed in compliance with 40 C.F.R. § 263		
Transportation of ***hazardous materials***	Shall be subject to and must comply with all applicable provisions of the HMTA and HMR at 49 C.F.R. §§ 171-180 related to marking, labeling, placarding, packaging, emergency response, etc.	Any person who, under contract with a department or agency of the federal government, transports "in commerce," or causes to be transported or shipped, a hazardous material – **Applicable**	49 C.F.R. § 171.1(c)
General Construction Standards – All Land-Disturbing Activities			
Activities causing storm water runoff (e.g., clearing, grading,	Implement good construction management techniques in accordance with the substantive requirements for	Dewatering or storm water discharges from land disturbed by	40 C.F.R. Part 122

Action	Requirements	Prerequisite	Citation
excavation)	permits issued pursuant to 40 C.F.R. § 122.26(c) – storm water discharges associated with industrial activity.	construction activity – **Applicable**	
Activities causing fugitive dust emissions	Shall not cause, allow, or permit the emission of particles, or any contaminants in sufficient amounts or of such duration from any process as to be injurious to humans, animals, plants, or property, or to create a condition of air pollution.	Fugitive emissions from construction operations, grading, or the clearing of land – **Applicable**	MDEQ Regulation APC-S-1, Section 3, Paragraph 3

ARAR = Applicable or Relevant and Appropriate Requirement
C.F.R. = Code of Federal Regulations
CWA = Clean Water Act of 1972
DEACT = deactivation
DOT = U.S. Department of Transportation
EPA = U.S. Environmental Protection Agency
HMR = Hazardous Materials Regulations
HMTA = Hazardous Materials Transportation Act
NPDES = National Pollution Discharge Elimination System
RCRA = Resource Conservation and Recovery Act of 1976
TBC = To Be Considered
UTS = Universal Treatment Standard

13.3 COST EFFECTIVENESS

After evaluating all of the alternatives which satisfy the two threshold criteria (protection of human health and the environment, and attainment of ARARs), EPA has concluded that the amended groundwater remedy, Alternative 2, affords the highest level of overall effectiveness proportional to its cost. Section 300.430(f)(1)(ii)(D) of the NCP also requires EPA to evaluate three out of five balancing criteria to determine overall effectiveness: long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; and short-term effectiveness. Overall effectiveness is then compared to cost to ensure that the remedy is cost-effective. The amended remedy for groundwater provides for overall effectiveness in proportion to its cost.

For groundwater, Alternative 1 - No Action, does not satisfy the primary criteria. The amended groundwater remedy, Alternative 2 is the least expensive of the alternatives for this Site, at a present worth cost of $285,713. Alternative 5 was the most expensive, at a present worth cost of $3,036,849, while Alternative 4 was more expensive than Alternative 3.

The estimated amended present worth costs for the selected remedies for both groundwater and soils are $2,545,705, as compared to the $3,442,483, as estimated in the 2002 Record of Decision.

13.4 UTILIZATION OF PERMANENT SOLUTIONS TO THE MAXIMUM EXTENT PRACTICABLE

EPA has determined that the amended groundwater remedy provides a permanent solution and can be implemented in a cost-effective manner for the final remediation at the Site to the maximum extent practicable. Of those groundwater alternatives that are protective of human health and the environment and comply with ARARs, EPA has determined that Alternative 2, for groundwater, provides the best balance of trade-offs in terms of long-term effectiveness and permanence, reduction in toxicity, mobility, or volume achieved through treatment, short-term effectiveness, implementability, and cost, while also considering the statutory preference for treatment as a principal element and consideration of state and community acceptance.

The amended groundwater remedy represents a permanent solution with respect to the risks posed by the Site.

13.5 PREFERENCE FOR TREATMENT AS A PRINCIPAL ELEMENT

The contaminated soils and/or sediments that remain at the Site pose a threat to groundwater; however, it does not constitute principle threat material.

The benefits of treatment for these soils/sediments would be reduction of toxicity, mobility, and/or volume. However, these benefits do not justify the much higher costs associated with the soil/sediment treatment alternatives, as compared with the off-site disposal option chosen in the 2002 ROD (and left unchanged by this amended ROD).

13.6 FIVE-YEAR REVIEW REQUIREMENTS

The NCP requires Five-Year Reviews at this Site, since the remedy will take longer than five years to reach the groundwater performance standards set forth in this document. The reviews will be triggered when the construction is completed for the remedy, and will be discontinued when the performance standards are reached in the groundwater. The attainment of both the groundwater and soil/sediment performance standards will ultimately allow for unlimited use and unrestricted exposure for this Site.

14.0 EXPLANATION OF SIGNIFICANT CHANGES

The Proposed Plan for this amended remedy was released to the public in October 2011. It identified Limited Action (Monitored Natural Attenuation) as the preferred alternative for remediation of the groundwater beneath the Site.

EPA has made minor changes to the remedy since the issuance of the Proposed Plan, including:

- Clarifying that the Remedial Action Objectives mean to restore groundwater to its beneficial use as a potential source of drinking water.

Future changes to the remedies selected, if and when made, will be documented appropriately and included as part of the Administrative Record. Extensive changes to the remedy may require another amendment to the Record of Decision (ROD). A ROD amendment would require that the change to the remedy be presented to the public with another proposed plan and a corresponding public comment period. If the change to the remedy is not extensive enough to warrant a ROD amendment, then an Explanation of Significant Difference (ESD) would be issued.

APPENDIX A
RESPONSIVENESS SUMMARY - CHEMFAX, INC.

The Responsiveness Summary shows how EPA considered public comments made on the Amended ROD, summarized below for the Chemfax, Inc. Site. These comments were provided at the Proposed Plan public meeting held October 13, 2011. For additional reference, a transcript of the public meeting is part of the Administrative Record for the Site. A copy of the Administrative Record is available for review at the information repository, which has been set up at the Orange Grove Public Library, located at 12031 Mobile Avenue, Gulfport, Mississippi. No written comments were received and no issues were identified during the public comment period for the amended remedial action.

Question 1: My name is Walter Thomas. What would happen if you don't ever clean that Site up?
EPA Response: Well, if we never did anything with it at all, ever? From this point forward, we believe that eventually the contaminants will do two things: They'll continue to degrade in the subsurface, in the soil and the groundwater, and that they will slowly, at three feet per year, continue to migrate across the Site. Again, most of it's in the southern part of the Site. But it would continue to migrate towards Bernard Bayou. So that's what we want to make sure doesn't happen. It would continue to move and degrade at the same rate. We want to make sure that doesn't happen, that we address the contamination one way or another.

Question 2: I am Carlos Flowers. How long will this cleanup take before it's completed and we can reuse the Site?
EPA/MDEQ Response: We believe maybe about six months to a year? We don't think it's going to be very long once we get it all designed up. So we're expecting it to take six to eight months, based on the volume of soil we're seeing and get confirmation sampling and analysis. And of course, the long-term side of it is the groundwater monitoring. And part of the process is to get a contract in place, to go out to a RFQ or RFP, will add a little more time onto that too. But once you mobilize, yes, six months I would think at the most, and weather permitting. After that, it would be ready for redevelopment.

Question 3: Russell Dobbyn. Who would assume the responsibility once it's redeveloped if for some reason they found out there it's leaching into the groundwater still and they have to come in and clean up again, which may very well involve, you know, leveling the new development?
EPA Response: EPA [would] continue to work with MDEQ in that highly unlikely scenario. So I don't that if we found that -- again, we're going to be monitoring the groundwater for the next 100 years to ensure that things are going the way that we believe that they will. If we find that things are not going the way that we think they will, leveling whatever is built on top of it would

probably not be one of the scenarios that we would evaluate. We would look at something in situ, something that could be done in the ground to address whatever is going on in there. And we would come out and do more sampling and look at other alternative technologies to address it at that point. We wouldn't come in and say let's start over from scratch and go over from that way.

Question 4: Richard Morris. Do we know what the percentage of contaminants in '05 was when Katrina came through? Because you said a few minutes ago if the contaminants migrate across the property. Well, we know that area was underwater. So we know you said that there's a minute percentage, if any, in Bernard Bayou. Have we done a study on the closest communities to see what effects have been arrived at?
EPA Response: We've taken samples on Site and in the surrounding area and none of the contaminants have, even post-Katrina, migrated off of the Chemfax Site. So all the contaminants are on Site. None of its going off Site. It just doesn't move that fast. It's a wax. So when we think about it, it has to go through 16 feet of soil and then it has to migrate.

Question 5: RICHARD MORRIS: What about the air quality?
EPA Response: Well, the air quality -- because there's nothing -- this is all subsurface. It's solid. And we went out in 1999. You saw the video of that where we did everything on the surface. So what we're talking about is everything that's about six inches and below. So we were just walking around on top of it. Everything's fine. There's nothing on top of the soil, so no air issues there.

Question 6: John Johnson. How much of this Site will be excavated?
EPA Response: Only about 18,000 cubic yards. We'll refine this as we get into the remedial design process. But the way that we came to 18,000 cubic yards, as we took the aerial extent of the most contaminated soils and said based upon that, down to the groundwater table, that's about 18,000 cubic yards. So this diagram, even though it says zero to one and zero to six there [in the figure], ignore that. That was from an old document when we just said we were going that far. Now we're proposing going deeper and this will be refined during the remedial design process. We'll go down it and take more samples and say, hey, we're going to take this much. And as we're excavating, as Michael [Slack] mentioned, we'll take confirmation samples at the bottom of the excavation to ensure that that is clean soil that we are leaving behind. So we're saying 18,000 cubic yards now, but that could increase as we actually get into the field. But those are the areas that we would take them from.

Question 7: How many square feet is that Site?
EPA Response: The whole Site is 11acres. This area here [where we would be excavating] is not the whole Site. It's just the central portion here.
Question 7a: That's just the contaminated part?
MDEQ Response: Yes. It's approximately 450 by 450, 500.
EPA Response: By 4 to 16 feet to the water.

Question 8: How deep – did you mention how deep the excavation would go?
EPA Response: It would go to the water table. During our sampling and in our investigation we found that throughout the Site groundwater is in between 4 to 16 feet below.
MDEQ Response: It's more in the 4-to-10-foot range than 16. We don't envision [we will] have to dig a 16-foot hole.

Question 9: When you say 18,000 cubic feet, give us a sense of maybe something we can -- how many tractor-trailer loads is that or something? Is there a way to quantify that?
MDEQ: An 18-yard is a big truck. I can't translate it into football stadiums, but that's a lot of dirt.

Question 10: Bill Bradley. So when it's done, there'll be a big hole there?
EPA Response: No. We'll back-fill with clean fill.

Question 11: I'm Lisa Bradley. You mentioned the approved EPA Site for disposal. Where is that disposal site?
EPA Response: We haven't selected that. That would be part of the remedial design.
LISA BRADLEY: But it's relatively local?
EPA Response: It probably would be.
MDEQ Response: Just to keep the cost down. It's not hazardous waste. It's a solid waste.
EPA Response: So it would be containerized and we would ensure that they met our permit standards and was an okay place to send it.

Question 12: Once this property is to be done and when it comes up for redevelopment, who says what can go on this property and will it be another chemical company?
Henry Arledge, Superintendent of Harrison County Schools Response: The School Board, we would make the decision. I understand that now what would go back on it -- no chemical plant would go back on it. You can see the development around I10, Home Depot, the Crossroads Mall, a Sam's, all of those type facilities. A retail development most likely, perhaps a hotel, something of that nature.
UNIDENTIFIED SPEAKER: [For a Bass Pro Shop], you're going to have to battle between D'Iberville and Gautier, I can tell you that, though. Gautier and D'Iberville are looking to try to persuade the Bass Pro Shop over there.

Question 13: LISA BRADLEY: So there's no Site restrictions? You'll use restrictions on that property once it's been mitigated?
EPA Response: No. There would be Institutional Controls for groundwater to ensure no one would use that. But as far as what could go there, that would be up to the County Board of Education.
LISA BRADLEY: If they wanted -- I'm not saying that they do, but if they wanted a dense multi-family development or something of that nature, that would be okay?

EPA Response: That would be okay per the cleanup standards, and those would be established. We're cleaning this up. That's what the residential use was about for cleaning this up to the point where you could put houses on it and it would be clean, to that standard.

Question 14: When is this supposed to start?
EPA Response: We're working with the State to take care of the cleanup. They would be the lead in the cleanup. So when funds are appropriated, we would work with them to ensure that this is taken care of. And plan B is that the federal government, EPA, would acquire federal funds to do it ourselves. So we hope in the next year or so.

Question 15: Okay. Bring me up to speed with you. Is this the Site that they had the explosion?
EPA Response: No. I understand that was Plastifax. Plastifax was a subsidiary of Chemfax that was located on Seaway Road. So that was a little ways further down I-10.

Question 16: Are these comments just for the cleanup or for what could be put back there?
EPA Response: Well, I think it's really for the cleanup. If you have thoughts and ideas as to what you would like the redevelopment to look like, you're welcome to share that with us as well and we'll definitely share that with the State and with the County. So we're happy to take that as well and share that with the decision-makers in that process.

CARLOS FLOWERS: Carlos Flowers, (b) (6) . And I propose that once the redevelopment comes in that it be used to house the containers from the port to reduce the -- putting them in the neighborhoods out in north Gulfport. This will take them out of the community and bring them up into what is already a business area, which would be a lot safer for the communities and residents.
EPA Response: Thank you for your comment. We will share your suggestion with the State and Harrison County School Board.

APPENDIX B
STATE CONCURRENCE LETTER

STATE OF MISSISSIPPI

HALEY BARBOUR

GOVERNOR

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

TRUDY D. FISHER, EXECUTIVE DIRECTOR

December 6, 2011

Ms. Gwendolyn Keyes Fleming
Regional Administrator
U.S. Environmental Protection Agency
Region 4
61 Forsyth Street, SW
Atlanta, Georgia 30303-3104

Re: Chemfax, Inc. Site
Harrison County, Mississippi

Dear Ms. Fleming:

The Mississippi Department of Environmental Quality (MDEQ) is in receipt of EPA's letter of October 19, 2011, regarding the placement of the Chemfax, Inc., site (the Site) located in Harrison County, Mississippi, on the national Priorities List (NPL). After review of the Hazard Ranking Score (HRS) in 1993 and the Remedial Investigation (RI) in 1996 conducted by EPA, MDEQ concurs that the HRS score qualifies the site to be placed on the NPL. Additionally, the State concurs with the recently proposed amended Record of Decision (ROD) for the site which changes the previously selected groundwater remedy for the site.

Sincerely,

Trudy D. Fisher
Executive Director

TDF:jar

APPENDIX C
UPDATED COST ESTIMATE MEMO FROM MICHAEL SLACK, MDEQ

Site: Chemfax
Book: 13.1
Other: N.1

MEMORANDUM

TO: Staff/File
FROM: Michael T. Slack - Groundwater Assessment and Remediation Division (MDEQ) – x5217
DATE: April 6, 2010
SUBJECT: Chemfax Inc. – Cleanup Cost - Estimate

The following are cost estimates for the cleanup of the above referenced Site, along with additional information.

- The ROD-Feasibility Study (2000) estimated that excavation, offsite transportation, and disposal of impacted soils (i.e., source areas – see email Attachment: *Source Areas*) at a Subtitle D Landfill would be $1,709,990 (this included $232,865 of O&M). This was based on a soil volume of 14,900 cy (surface area = 130,000 ft^2). See attachment (*FS Addendum*).

- Based on present day information, 14,900 cy (approx. 22,350 tons) @ a unit cost estimate at $65.00 per ton (excavate, transport, and dispose of soil - remediation contractor) at Waste Management Pecan Grove Landfill would be $1,452,750 with the following added costs:

  - Backfill excavation (remediation contractor) - $402,300 ($18.00 per ton x 22,350 tons)
  - Remediation Report - $8,500
  - Waste profile estimate for acceptance into landfill - $5,000
  - Confirmation sampling from excavation sidewalls and floor - analytical costs - $16,000 (floor - 10 samples per 10,000 ft^2 @ $100 per sample (130,000 ft^2) & excavation walls - 1 sample per 45 linear ft (approx. 1,400 ft linear ft) = approx. 160 total samples)
  - Technician costs for confirmation sampling - $6,000 - 5 (12-hour) days @ $100 per/hr.

  Remediation cost estimate: $1,890,550

- The ROD/Feasibility Study also calculated an additional volume of 2,916 cy yards of soil based on residential scenario. This would add the following costs if these soils were addressed:

  - 2,916 cy (approx. 4,374 tons) @ a unit cost estimate at $65.00 per ton (excavate, transport, and disposal of soil - remediation contractor) at Waste Management Pecan Grove Landfill would be $284,310.
  - Backfill excavation (remediation contractor) - $78,732 ($18.00 per ton x 4,374 tons)
  - Confirmation sampling from excavation sidewalls and floor - $4,000 (floor 25 samples – 25,000 ft^2 & 15 excavation wall samples - 630 linear ft = 40 samples).
  - Technician costs for confirmation sampling - $2,400 - 2 (12-hour) days @ $100 per/hr.

  Additional remediation cost estimate: $369,442

- Operation & Maintenance (O&M) – Estimate - Present Value for 100 years (see Attachment: *Groundwater Monitoring Cost Summary*):

  O&M: $285,713.91

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APPENDIX D
BASELINE RISK ASSESSMENT FROM THE CHEMFAX 2000 FEASIBILITY STUDY

2.3 Summary of Human Health Risk Assessment

The human health baseline risk assessment (BRA-HH) completed by CDM Federal (CDM Federal 1999a) noted in an evaluation of current use risk that the site is in a commercial/industrial area, but is currently inactive. Therefore, a site visitor is the only currently exposed receptors. BRA-HH calculations indicated that total excess incremental lifetime cancer risk is 8×10^{-7}. This estimate is below EPA's target range for Superfund sites (IE-4 to IE-6). In addition, noncancer effects would not be expected based on a calculated hazard index (HI) of less than one.

In the future, the site may be redeveloped for either residential or commercial/ industrial use. Potential receptors would be site visitors, site workers, child residents, adult residents, and lifetime residents. The total excess incremental lifetime cancer risk estimates ranged from 8×10^{-7} for the site visitor to 2×10^{-3} for the lifetime resident. In addition to the lifetime resident, risk estimates for the site worker, child resident and adult resident were above EPA's target range for Superfund sites. Noncancer effects are also possible for child, adult, and lifetime resident receptors based on calculated HIs of 4, 33, and 44, respectively.

The BRA defined chemicals of concern (COCs) for the site by identifying the most signficant contaminants in an exposure scenario that exceeds an excess cancer risk level of IE-4 or an HI of 1. More specifically, COCs have individual excess cancer risk levels of IE-6 or an Hazard Quotient (HQ) of 0.1 in a given exposure scenario.

The BRA then calculated RGOs by combining the intake levels of each COC from all appropriate exposure routes for a particular medium and rearranging the risk equations to solve for the concentration term (RGO). RGOs provide remedial design staff with long-term targets to use during analysis and selection of remedial alternatives. Ideally, such goals, if achieved, will comply with ARARs and result in residual risks that fully satisfy the National Contingency Plan (NCP) requirements for

the protection of human health and the environment. Risk-based RGOs are guidelines and do not establish that cleanup to meet these goals is warranted. Risk-based RGOs were calculated for both cancer and non-cancer effects for the COCs in surface soil, surface water, and groundwater at the Chemfax site. Incremental cancer and non-cancer risk RGOs for each scenario are presented in Tables 2-1 and 2-2.

2.4 Summary of Screening Level Ecological Risk Assessment

As previously indicated, a screening level ecological risk assessment (SLERA) was completed by CDM Federal for the Chemfax site (1999b). The screening level risk assessment noted that soil, including wetland soils, surface water, and sediment have been impacted by the release of source contaminants and defined ecological chemicals of potential concern (COPCs) for surface water, sediments, and soils. COPCs in surface water showed HQs greater than one for semivolatile organic compounds (SVOCs), pesticides, and metals. Ecological COPCs in sediment showed HQs greater than one for VOCs, SVOCs, pesticide/polychlorinated biphenyls (PCBs), and metals.

Several COPCs in soil were defined for VOCs, SVOCs and pesticides either because HQs were greater than one or because no Region IV screening-level bench mark values were available. The SLERA demonstrates the potential for risk to ecological receptors from exposure to all site media and recommends a meeting to initiate development of the problem formulation phase for a baseline ecological risk assessment.

Table 2-1
Human Health Risk-Based Remedial Goal Options for Surface Soil
Chemfax Site
Gulfport, Mississippi

Contaminant of Concern	Remedial Goal Option (in mg/kg)					
Protection of Human Health (Surface Soil)	Lifetime Resident Scenario					
	1E-6	1E-5	1E-4	HQ=0.1	HQ=1	HQ=3
Benzo(a)anthracene	1.0	7.0	69	NA	NA	NA
Benzo(b and/or k)fluoranthene	1.0	7.0	69	NA	NA	NA
Benzo(a)pyrene	0.10	1.0	7.0	NA	NA	NA
Chrysene	69	690	6,900	NA	NA	NA
Indeno(1,2,3-cd)pyrene	1.0	7.0	69	NA	NA	NA
Aluminum	NA	NA	NA	7,300	73,400	220,000
Antimony	NA	NA	NA	3	29	88
Arsenic	0.40	4.0	42	2.0	23	69
Iron	NA	NA	NA	2,200	22,000	66,000
	Onsite Worker Scenario					
	1E-6	1E-5	1E-4	HQ=0.1	HQ=1	HQ=3
Benzo(a)anthracene	4.0	36	360	NA	NA	NA
Benzo(b and/or k)fluoranthene	4.0	36	360	NA	NA	NA
Benzo(a)pyrene	0.40	4.0	36	NA	NA	NA
Chrysene	360	3,600	36,000	NA	NA	NA
Indeno(1,2,3-cd)pyrene	4.0	36	360	NA	NA	NA
Arsenic	3.0	34	340	55	550	1,600
Chromium	450	4,500	45,000	150	1,500	4,500
Iron	NA	NA	NA	38	388, 000	1,160,000

Note: Noncancer remedial goal options are based on a residential child's exposure.

Table 2-2
Human Health Risk-Based Remedial Goal Options for Groundwater
Chemfax Site
Gulfport, Mississippi

Contaminant of Concern	Remedial Goal Option (in ug/l)					
Protection of Human Health (MCLs in parentheses when available)	Lifetime Resident Scenario					
	1E-6	1E-5	1E-4	HQ=0.1	HQ=1	HQ=3
Benzene (5)	1.0	12.0	119	NA	NA	NA
Ethylbenzene(700)	NA	NA	NA	156	1,564	4,693
Methyl butyl ketone	NA	NA	NA	63	626	1,877
Toluene(1000)	NA	NA	NA	313	3,129	9,386
2-Methylnaphthalene	NA	NA	NA	31	313	939
Bis(2-chloroethyl)ether	0.03	0.3	3	NA	NA	NA
Naphthalene	NA	NA	NA	31	313	939
	Onsite Worker Scenario					
	1E-6	1E-5	1E-4	HQ=0.1	HQ=1	HQ=3
Benzene(5)	10	99	987	NA	NA	NA
Ethylbenzene(700)	NA	NA	NA	1,022	10,220	30,660
Methyl butyl ketone	NA	NA	NA	409	4,088	12,264
Toluene(1000)	NA	NA	NA	2,044	20,440	61,320
2-Methylnaphthalene	NA	NA	NA	204	2,044	6,132
Bis(2-chloroethyl)ether	0.3	3	26	NA	NA	NA
Naphthalene	NA	NA	NA	204	2,044	6,132

Note: Noncancer remedial goal options are based on a residential child's exposure.

NA-Not applicable. MCLs - U.S. EPA Maximum Contaminant Levels

APPENDIX E
COMPARISON OF GROUNDWATER DATA 1999 - 2009

GROUNDWATER DATA COMPARISON
1999 TO 2009
CHEMFAX, INC.
GULFPORT, MS
2009 Site Characterization Report (in mg/L)

LOCATION	ANALYTE	1999	2002	2005	2009
MW-02B	Benzene	0.812	ND	ND	<0.005
MW-05A	Benzene	0.018	0.0177	0.0143	0.0179
MW-06A	Benzene	0.026	0.0406	0.0202	<0.005
TMW-03A	Benzene	0.83			0.724
TMW-04A	Benzene	0.001			<0.005
TMW-05A	Benzene	0.21			0.00558
TMW-06A	Benzene	7.1			5.74
TMW-07A	Benzene	0.001			<0.005
TMW-08A	Benzene	0.002			<0.005
TMW-10A	Benzene	0.009			<0.005
TMW-11A	Benzene	0.052			0.00752
TMW-14A	Benzene	0.012			<0.005
TMW-15A	Benzene	0.032			0.0112
MW-02A	Ethylbenzene	0.022	0.022	ND	<0.005
MW-02B	Ethylbenzene	0.00271	0.001	ND	<0.005
MW-05A	Ethylbenzene	0.062	0.087	0.0634	0.0543
TMW-03A	Ethylbenzene	1.9			0.638
TMW-05A	Ethylbenzene	0.22			<0.005
TMW-06A	Ethylbenzene	2.8			1.42
TMW-07A	Ethylbenzene	0.001			<0.005
TMW-10A	Ethylbenzene	0.1			<0.005
TMW-11A	Ethylbenzene	0.093			0.0182
TMW-14A	Ethylbenzene	0.007			<0.005
TMW-17A	Ethylbenzene	0.009			<0.005
MW-02A	Methylnaphthalene, 2-	0.004			<0.0101
MW-05A	Methylnaphthalene, 2-	0.26			0.0748
MW-06A	Methylnaphthalene, 2-	0.001			<0.0101
TMW-03A	Methylnaphthalene, 2-	0.004			<0.0101
TMW-05A	Methylnaphthalene, 2-	0.11			<0.0101
TMW-06A	Methylnaphthalene, 2-	0.095			0.0131
TMW-07A	Methylnaphthalene, 2-	0.003			<0.0101
TMW-08A	Methylnaphthalene, 2-	0.024			<0.0182

TMW-10A	Methylnaphthalene, 2-	0.045			<0.0101
TMW-11A	Methylnaphthalene, 2-	0.017			<0.0101
TMW-12A	Methylnaphthalene, 2-	0.8			0.19
TMW-13A	Methylnaphthalene, 2-	0.042			0.0191
TMW-14A	Methylnaphthalene, 2-	0.014			<0.01
MW-02A	Naphthalene	0.004	0.004	ND	<0.0101
MW-05A	Naphthalene	1.4	1.839	0.754	0.742
MW-06A	Naphthalene	0.001	ND	ND	<0.0101
TMW-03A	Naphthalene	0.2			0.012
TMW-05A	Naphthalene	0.29			<0.0101
TMW-06A	Naphthalene	2			0.307
TMW-07A	Naphthalene	0.005			<0.0101
TMW-08A	Naphthalene	0.054			<0.0182
TMW-10A	Naphthalene	0.68			<0.0101
TMW-11A	Naphthalene	0.06			<0.0101
TMW-12A	Naphthalene	0.97			0.496
TMW-13A	Naphthalene	0.062			0.0257
TMW-14A	Naphthalene	0.023			<0.01
MW-02A	Toluene	0.005	0.005	ND	<0.005
MW-02B	Toluene	0.00131	ND	ND	<0.005
TMW-05A	Toluene	0.017			<0.005
TMW-06A	Toluene	0.64			0.154
TMW-10A	Toluene	0.012			<0.005
TMW-11A	Toluene	0.013			<0.005
MW-02A	Xylenes	0.023		ND	<0.005
MW-02B	Xylenes	0.00256		ND	<0.005
MW-05A	Xylenes	0.11	0.151	0.1253	0.0908
TMW-03A	Xylenes	2.7			1.177
TMW-04A	Xylenes	0.001			<0.005
TMW-05A	Xylenes	0.5			<0.005
TMW-06A	Xylenes	2.8			1.482
TMW-07A	Xylenes	0.008			<0.005
TMW-08A	Xylenes	0.006			<0.005
TMW-10A	Xylenes	0.066			<0.005
TMW-11A	Xylenes	0.088			0.0287
TMW-13A	Xylenes	0.008			<0.005
TMW-14A	Xylenes	0.007			<0.005
TMW-15A	Xylenes	0.016			<0.005
TMW-17A	Xylenes	0.01			<0.005

MW-02A	Benzene	0.66	0.66	1.307	0.749
TMW-02A	Benzene	0.0026			0.11
TMW-12A	Benzene	<0.01			0.0736
TMW-13A	Benzene	0.003			0.00956
TMW-12A	Ethylbenzene	<0.01			0.0436
TMW-13A	Ethylbenzene	0.005			0.00705
MW-05A	Toluene	0.042	0.054	0.0448	0.0616
TMW-03A	Toluene	1.3			2.16
TMW-12A	Xylenes	<0.01			0.0688
MW-03A	Benzene	<0.01	ND	ND	<0.005
MW-03B	Benzene	<0.01	ND	ND	<0.005
MW-04A	Benzene	<0.01	ND	ND	<0.005
MW-04B	Benzene	<0.01	0.0095	ND	<0.005
MW-05B	Benzene	<0.01	ND	0.0121	<0.005
MW-06B	Benzene	<0.01	ND	ND	<0.005
MW-07A	Benzene	<0.01	ND	ND	<0.005
MW-09A	Benzene	<0.01	ND	ND	<0.005
MW-10A	Benzene	<0.01	ND	ND	<0.005
TMW-16A	Benzene	<0.01			<0.005
TMW-01A	Benzene	<0.001			<0.005
MW-03A	Ethylbenzene	<0.01	ND	ND	<0.005
MW-03B	Ethylbenzene	<0.01	ND	ND	<0.005
MW-04A	Ethylbenzene	<0.01	ND	ND	<0.005
MW-04B	Ethylbenzene	<0.01	ND	ND	<0.005
MW-05B	Ethylbenzene	<0.01	ND	0.0174	<0.005
MW-06A	Ethylbenzene	<0.01	ND	ND	<0.005
MW-06B	Ethylbenzene	<0.01	ND	ND	<0.005
MW-07A	Ethylbenzene	<0.01	ND	ND	<0.005
MW-09A	Ethylbenzene	<0.01	ND	ND	<0.005
MW-10A	Ethylbenzene	<0.01	ND	ND	<0.005
TMW-04A	Ethylbenzene	<0.01			<0.005
TMW-08A	Ethylbenzene	<0.01			<0.005
TMW-15A	Ethylbenzene	<0.01			<0.005
TMW-16A	Ethylbenzene	<0.01			<0.005
TMW-01A	Ethylbenzene	<0.001			<0.005
TMW-02A	Ethylbenzene	<0.001			<0.005
MW-03B	Methylnaphthalene, 2-	<0.01			<0.0102
MW-06B	Methylnaphthalene, 2-	<0.01			<0.0102
MW-02B	Methylnaphthalene, 2-	<0.01			<0.0101

MW-03A	Methylnaphthalene, 2-	<0.01			<0.0101
MW-04A	Methylnaphthalene, 2-	<0.01			<0.0101
MW-04B	Methylnaphthalene, 2-	<0.01			<0.0101
MW-05B	Methylnaphthalene, 2-	<0.01			<0.0101
MW-07A	Methylnaphthalene, 2-	<0.01			<0.0101
MW-09A	Methylnaphthalene, 2-	<0.01			<0.0101
MW-10A	Methylnaphthalene, 2-	<0.01			<0.0101
TMW-04A	Methylnaphthalene, 2-	<0.01			<0.0101
MW-03B	Naphthalene	<0.01	ND	ND	<0.0102
MW-06B	Naphthalene	<0.01	ND	ND	<0.0102
MW-02B	Naphthalene	<0.01	ND	ND	<0.0101
MW-03A	Naphthalene	<0.01	ND	ND	<0.0101
MW-04A	Naphthalene	<0.01	ND	ND	<0.0101
MW-04B	Naphthalene	<0.01	ND	ND	<0.0101
MW-05B	Naphthalene	<0.01	0.016	0.293	<0.0101
MW-07A	Naphthalene	<0.01	ND	ND	<0.0101
MW-09A	Naphthalene	<0.01	ND	ND	<0.0101
MW-10A	Naphthalene	<0.01	ND	ND	<0.0101
TMW-04A	Naphthalene	<0.01			<0.0101
TMW-15A	Toluene	<0.05			<0.005
MW-03A	Toluene	<0.01	ND	ND	<0.005
MW-03B	Toluene	<0.01	ND	ND	<0.005
MW-04A	Toluene	<0.01	ND	ND	<0.005
MW-04B	Toluene	<0.01	ND	ND	<0.005
MW-05B	Toluene	<0.01	ND	0.0248	<0.005
MW-06A	Toluene	<0.01	ND	ND	<0.005
MW-06B	Toluene	<0.01	ND	ND	<0.005
MW-07A	Toluene	<0.01	ND	ND	<0.005
MW-09A	Toluene	<0.01	ND	ND	<0.005
MW-10A	Toluene	<0.01	ND	ND	<0.005
TMW-04A	Toluene	<0.01			<0.005
TMW-07A	Toluene	<0.01			<0.005
TMW-08A	Toluene	<0.01			<0.005
TMW-12A	Toluene	<0.01			<0.005
TMW-13A	Toluene	<0.01			<0.005
TMW-14A	Toluene	<0.01			<0.005
TMW-16A	Toluene	<0.01			<0.005
TMW-17A	Toluene	<0.01			<0.005
TMW-01A	Toluene	<0.001			<0.005

TMW-02A	Toluene	<0.001			<0.005
MW-03A	Xylenes	<0.01	ND	ND	<0.005
MW-03B	Xylenes	<0.01	ND	ND	<0.005
MW-04A	Xylenes	<0.01	ND	ND	<0.005
MW-04B	Xylenes	<0.01	ND	ND	<0.005
MW-05B	Xylenes	<0.01	ND	0.0572	<0.005
MW-06A	Xylenes	<0.01	ND	ND	<0.005
MW-06B	Xylenes	<0.01	ND	ND	<0.005
MW-07A	Xylenes	<0.01	ND	ND	<0.005
MW-09A	Xylenes	<0.01	ND	ND	<0.005
MW-10A	Xylenes	<0.01	ND	ND	<0.005
TMW-16A	Xylenes	<0.01			<0.005
TMW-01A	Xylenes	<0.001			<0.005
TMW-02A	Xylenes	<0.001			<0.005

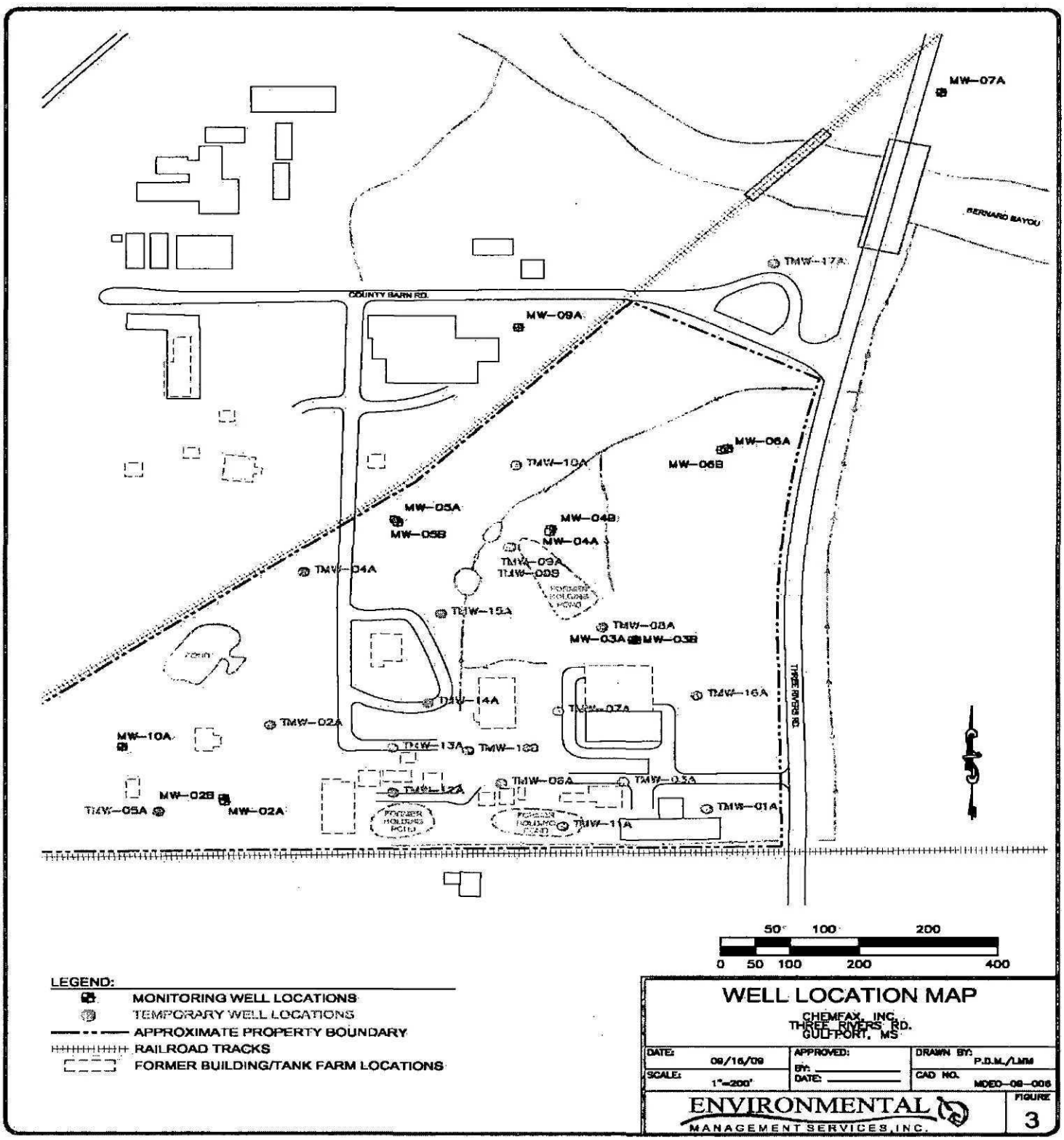

Figure 6 - Well Location Map